

...EMPLOYEE PHYSICAL FITNESS IN CANADA...

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The National Conference
on Employee Physical Fitness**

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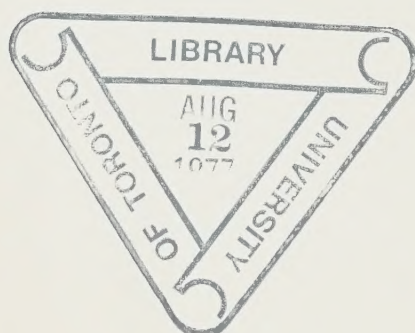


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Prologue

It is with great pleasure that I introduce this document on Employee Physical Fitness in Canada.

It contains the Proceedings of the first national conference on this subject, organized for the purpose of stimulating the development of fitness programmes for employees and of studying the various aspects involved, with a view to formulating policy principles and guidelines.

To this end, delegates from some fifty Canadian organizations representing employers, employees and the health professions were invited to join representatives from the various levels of government as well as members of related professions, for three days of intensive study.

It gave me a great deal of satisfaction that the Department of National Health and Welfare had the honour of hosting this important event, and the interest and enthusiasm shown by the delegates augurs well for the achievement of the objectives.

Marc Lalonde



PRESENTATIONS





**The Honourable A. W. Gillespie,
Minister of Industry, Trade and
Commerce**

OPENING OF CONFERENCE

Ladies and Gentlemen. Welcome!

I want to say how impressed I am with those of you who have come to Ottawa to attend this conference and are prepared to start off with a blood test, that is to say, give a little blood, when a lot of people associate Ottawa with doing that to them most of the time.

It is a great pleasure, for me, to welcome you to this conference on behalf of the Government of Canada. Your presence here, and especially the enthusiasm and interest with which you reacted to the invitation to participate, indicates the importance that you and the organizations you represent attach to physical fitness, as a contribution to overall health. It is most encouraging to notice how Canadians have become concerned with fitness, though they have been a bit slow in coming to that realization. However, it seems to me, that realization is now coming. I guess we've got a very long way to go. I don't know whether it is our distances or our winters which have discouraged us from becoming a nation of bicycle riders. For example, I am not sure whether it is our distances or our winters which have discouraged Canadians from discovering the satisfaction of walking, but be that as it may, public attitudes towards exercise are changing particularly amongst our younger people. That leaves the question in my mind: "what is happening to those over the age of 25?"

There is evidence of a rapidly growing number of clubs and organizations which are offering opportunities to Canadians to participate in fitness producing activities. But, despite the many excellent programmes, these reach only a very small proportion of the population. Special initiatives must be taken, special initiatives to reach the increasing number

of Canadians whose day-to-day work has become more and more sedentary and is requiring less and less physical activity. The trend towards occupational inactivity threatens to create a serious health hazard. It is gratifying to notice that growing numbers of employees and employers realize that maybe they have a responsibility in this area, to themselves and to their employees. Offering sedentary workers the opportunity to participate in physical fitness classes reduces the health hazard and may well contribute to increased interest in their jobs, greater happiness, more positive attitudes, reduced absenteeism and increased production. In short, it might even be good business.

A number of corporations all over the world have been offering this kind of programme and their numbers are growing. Also in Canada, there are encouraging examples of active employee fitness programmes. Later on this morning you will, I understand, be given an overview of activity in this area. These and the growing number of requests for information made Mr. Marc Lalonde and the Government realize that the time has come to take a serious look at the various aspects of physical fitness classes. The aim is to discover the feasibility of introducing these on a much broader scale, of looking at the various possibilities for implementation, and possibly of developing guidelines and suggestions.

As you will have noticed from the material you were provided with, the Conference format is one of information-sharing during most of today, to prepare the delegates for the discussions in the forthcoming workshop sessions, which indeed form the essential part of the entire programme. Special efforts have been made to provide all delegates with as much pertinent information as is necessary and highly-qualified leaders were found, and are prepared to guide and synthesize the workshop discussions. At the same time, you will have ample opportunity to test your own fitness. I believe some of you have already started to become involved in a variety of activities, and we hope that as many of you as is possible will

take advantage of the available opportunity. Your positive reaction to our invitation and the interest you have expressed gives me the confidence that this conference will mean an important step towards the overall objective of raising the fitness level of Canadians.

I wish you success in your deliberations and we look forward to the recommendations and resolutions the workshop sessions will produce.

Thank you Mr. Chairman, and good luck to all.

SEDENTARY OCCUPATIONS... A HEALTH HAZARD

M. Philippe de Gaspé Beaubien

B.A. University of Montreal; M.B.A. Harvard; Director of Operations with the Canadian Corporation for the 1967 World Exhibition; Chairman of the National Advisory Council on Fitness and Amateur Sport; presently, President, Quebec Telemedia Incorporated.



Ladies and Gentlemen:

I don't know why I am here speaking to you today since the area you are examining together is not really one that I am involved in on a regular basis. Nevertheless, it would give me great pleasure to make some remarks, and pass on a few personal observations to you if that could help in any way.

The way I look at it, more and more of the people that I come into contact with in daily life are living and working in abnormal conditions. The employees surrounding me spend the large part of their day in sedentary type occupations, and I do not believe this is natural.

What with our offices being located in the core of downtown Montreal near Peel and Ste. Catherine, the din and noise that bombard us constantly is something unimaginable. Even with the windows closed, it takes an almost herculean effort to conduct a logical comprehensive discussion with anyone over the phone. Indeed, some people have gone so far as to say that if the noise level continues to escalate unabated at the present rate, most people will be deaf, in terms of present standards, by the year 2000. This is a frightening prognosis.

When I arrive at the office I find myself forced to function in a contained environment that is far from normal. If I compare that situation with my outing in the woods yesterday, dashing about on skis, I find the contrast almost startling.

It disturbs me to arrive at work, and be forced to make use of an artificial contrivance called an elevator simply to rise a couple of stories to my destination. And once there, to be subjected to artificial lighting that is a poor substitute for natural sunlight, or to inhale air that is pumped via some conveyance into the building and artificially heated or refrigerated.

If we add to the picture a social and psychological state of affairs that is again, far from salubrious, the overall situation takes on a further distortion. The average businessman, union leader, government official is subject to an overwhelming set of pressures and demands. Whether these take the form of a telephone buzzing at an increasingly accelerated rate or a

mountain of information that must be assimilated, processed, synthesized and spewed out, it all amounts to the same thing, an atmosphere, a life style whose rhythm is unnatural and disturbing. What is the impact of all these pressures? Stress... for me at any rate. What is necessary today is the discovery of ways and means to manage and actively channel these tensions in a productive fashion. If we don't, the outcome is obvious: the machine will inevitably corrode and break down. Unlike any other machine, the human body is the only one we know of that falls apart from lack of use.

The interaction and combined pressure of an unhealthy physical environment aggravated by unremitting social and psychological demands not only produces stress, but also contributes to a rising incidence of disease, particularly heart disease.

One common denominator in all of this that has been isolated in research is the rate of change. Some of you may define that as stress. I understand that Dr. Selye, who will be addressing you today, has described it as stress.

It appears that the number and rate of changes in a person's life are predictive of his state of health. One research study I came across in the course of preparing my material for today unearthed some firm evidence attesting to this. Its implications are rather sobering to say the least.

The study went so far as to measure and quantify life changes, and to assign a valence, or weight to each of these changes according to its impact on health. For example, a change of occupation rated X number of points, while death of a spouse rated much higher. The negative or positive valence of the change proved to be not as significant on the overall number of changes experienced throughout a defined period of time. The authors claimed that a total score of 100 points in a single year could engender a minor illness and should a person accumulate a yearly total of 300 points, and believe me, there are activities that can generate that amount in a single shot, that person would be running the risk of a major health change, be it sickness, accident, injury or disease.

The findings, based on research with a representative sample of American citizens, are interesting, and give rise to some serious questions. Could it be that these pent-up physical frustrations are intensifying the dissatisfaction already felt by men and women working in our post industrial society? Could it be that the growing strife and labour unrest we've been witnessing in the past few years are in some way attributable to, even commensurate with, the frustrations these employees face daily? And could it be that these frustrations, coupled with an abysmal lack of physical activity, are leaving their mark on the prime movers of our society, our leaders, causing their stress index in turn to soar to ridiculous heights?

Those people we call managers are burdened from the outset with what is popularly called "information overload". Add to this the demands made on their time, the innumerable decisions they are obliged to make, and the sheer scope and complexity of the problems confronting them, and you emerge with an image of our time that would have sent our primeval ancestors scurrying back to their caves.

Last year in the United States alone 30% of top management changed jobs. A chilling statistic, to ponder. Again, is this not symptomatic of the increasing burdens that must be borne by management?

Another statistic concerned me even more. 35% of all middle management interviewed in the United States last year, and we are talking here of mid-level management, not top level . . . 35% admitted that they were looking for a career change. Not a job change, mind you, but new careers to embark upon. Again, I put it to you, could it be that these problems are being created in some measure by the pressures built into contemporary society, including those stemming from the absence of physical activity?

Most of us would reply: So what? There it is, it is a fact of life. Nowadays, conventional wisdom says you can't change it nor can you escape it. The system is bogged down and it takes time to change it. Conclusion? Man must learn to live with it. What concerns me most is that we haven't.

We are assembled here today at this conference representing widely-varying interests and professions, yet united by our common desire to re-establish a sounder and more stable equilibrium in our own lives and in the lives of those surrounding us. We wish to examine, amongst other things, what positive channels men and women can employ to release their ever-growing physical tensions. I hope that we can go beyond such pervasive outlets as radio and television, whose role in relaxation and entertainment are already well documented.

Our challenge now is to discover and promote ways for people to actively "sweat out" their tensions.

Canadians, I believe, are sorely wanting of physical activity; this in spite of all the natural and human resources they can command and deploy towards this end. You have only to travel outside the country to realize how fortunate we are. I have just returned from a trip to Europe myself, and must convey to you my happiness on landing here, realizing the tremendous opportunities available to us as Canadians. It would be sad to see them go to waste.

Many Canadians are spurring themselves on to greater physical activity and many have heard about "*Participaction*" which you will be discussing later today.

Others would like to mobilize themselves, eat less and perhaps ventilate their frustrations more positively, but they lack either the opportunity or the support. And that may really be all they need to drag themselves out of inertia.

Would it be possible for you to set aside at least 5 or 6 minutes during this conference and consider the following question: How can you help in providing opportunities to the many people who are now ready to accept the solutions you offer them?

To date, the government has emerged as the main architect in the search for solutions to this mass inactivity syndrome. They always seem to be running one step ahead of us, since they gather the facts and can accurately microscope the problem. They are grappling for possible solutions. They have convened this conference, they are spending some monies to resolve the problem, and they are planning concrete programmes.

There are others as well, businessmen for example, who are getting involved with companies like Sport Participation, and trying to convey to Canadians the urgency of getting off their duffs and doing something; anything, but something. Communities too, are organizing recreational activities for their residents. Schools, institutions, a myriad of groups across the country are caught up in this endeavour; at least a thousand programmes are in progress right now.

And we must not ignore the individual efforts being made by parents to keep their children fit. Tossing the proverbial football around, skiing, tennis and swimming not only make for more robust bodies and minds but also enhance family ties.

So a great many Canadians are already convinced there is a problem and are reckoning with it concretely and imaginatively. But that, my friends, is not enough.

The magnitude of problems facing our country now in the area of health care is simply staggering. The cost to us as taxpayers of remedying this situation is beyond belief. Only today, I was informed that the monies being appropriated to health care in Canada presently could well be in the vicinity of ten billion dollars. If these costs continue to grow at the present rate, by the year 2000, two budgets alone representing education on the one hand and health and welfare on the other, will be large enough to absorb all of our gross national product by the year 2000 unless we do something about it.

As intelligent people, we should devote more time to thinking about prevention, about getting a grip on the problem before it's too late. For every dollar being expended now on curing illness, and we're talking 8 to 10 billion dollars annually, a mere 5% is being spent on prevention. I do not view this as a particularly wise allocation of funds.

Indeed, one of the challenges facing us today is not to find ways of spending even more money on remedial care, but of nipping the problem in the bud, of using available knowledge and resources to prevent sickness and to check any further spiralling of health costs.

In present day society, the large majority of people spend most of their waking hours outside the home at work, and it is at work that we are going to have to reach them. There is growing evidence that Canada faces serious problems in the area of employee stress, stress arising partly from the lack of physical activity. Our purpose in getting together today is to ponder this problem, examine its implications, and hopefully emerge with certain blueprints for action.

The problem is really far too complex and pervasive for either government or industry to handle alone. That is why this conference has called on delegates from both the public and private sector, from unions and management, from provincial and federal bodies, from academia and elsewhere, to come together and pool their knowledge in the search for solutions.

I commend you for having accepted to come here and study the problem in earnest. I can only wish you the courage to confront the situation as it really is.

Your conclusions and recommendations must not take on the evangelical veneer of wanting to change people. Remember, we do not live in a society where people can be programmed as we see fit.

Yours is a more difficult task. You must convince them, you must motivate them, you must inspire them to take action. I am confident that this can be accomplished. What better testimony exists to this than the track records of business, unions, industry and government in effecting changes in job security and safety, or in adopting measures to improve the health and welfare of employees and management.

Witness today, conditions we take for granted in our plants and offices that did not exist before; the first-aid room, fire and accident prevention and procedures, company and union health benefit plans. All attest to the tremendous advances we've made in the area of social welfare at work.

But, it is not enough. The physical inertia of Canadians at work and at play is begging for a solution and for conscientious benefactors. Your analysis of the problem will be a difficult one; convincing others to participate in its solution may prove even harder.

I for one am convinced that what we are striving for together has a good chance of succeeding. This conference is national in scope, multi-disciplinary in attendance, timely in approach, and above all, human in its concern.

My note here as Chairman of the Fitness and Amateur Sports' Council is, to welcome you, and say I wish you luck.

I hope that what you accomplish here will prove to be actionable. And should you in your wisdom decide that the problems merit immediate attention, don't be deterred in the process by the fact that you don't have all the facts, or invoke the absence of scientific evidence as an excuse for delaying action. There is more than enough evidence emanating from the business world to conclude that a problem exists and that your help is needed in solving it.

Don't draw the curtains on your intentions because of the paucity of adequate physical facilities in Canada. I think that we can make better use of those already in existence. And with some imagination and, at very little cost, we can convert available space into exercise rooms or jogging tracks.

To conclude, ladies and gentlemen, I pray that one of your conclusions will not be to hand the entire affair over to the government and abdicate your responsibility in the matter.

A nation is not built, nor does it survive and grow by governments alone. A nation is built by people, and you are here as people to exercise your responsibilities collectively and in earnest.

Our country is not only endowed with tremendous physical and human resources it is possessed of the greatest gift of all; the gift of peace.

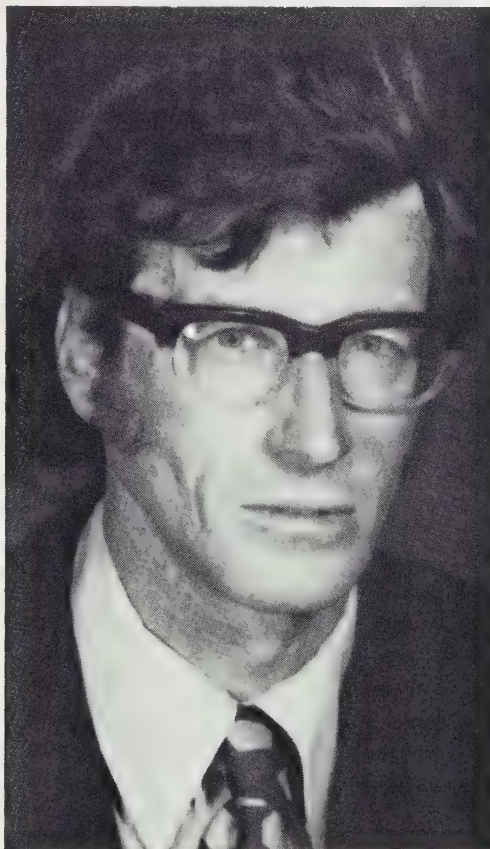
There is no warfare here, no physical strife to consume our time and talents. Let us benefit from this peace by devoting our energies to improvements in the quality of life and the state of our national well-being. Can we count on you? . . . Thank you very much.

Mall Peepre

B.A., B.P.H.E. Queen's University; Masters in Ed.(P.E.) Northern Michigan University; spent 2 years as a High School physical education teacher; since 1972, Fitness Consultant, Recreation Canada; special interest areas: women's rhythmic gymnastics, fitness testing, fitness leadership development.

**Sandy Keir**

B.Sc. George Williams College in Chicago; graduate studies at the University of Toronto, University of Illinois; worked for the Canadian Y.M.C.A. with prime interest in motivating adults into physical activity programmes, which included two Keep-Fit records for home use and a daily television show for housewives; spent five years in Trinidad as a C.I.D.A. Consultant to the Trinidad-Tobago Government setting up physical and health education programmes; presently; Head of the Fitness Section, Recreation Canada, Fitness and Amateur Sport Branch, Department of National Health and Welfare.

**EMPLOYEE FITNESS TODAY**

Cor Westland: Before introducing the next item on the programme, I would like to draw your attention to the centrefold of the programme where you will find the number of calories you are going to take in today at your various meals, nutrition breaks and even cocktail hour, and how many calories you are going to burn up as you sit and listen, sleep and so on. It is rather impressive, I must say—I think it is more profitable to sleep through a session than to listen—from a caloric point of view, that is!

Between now and lunch, what we would like to do is to show you what is being done in the area of employee fitness around the world. Most of you are quite familiar with the fact that we are not talking about anything new. I am originally from Holland and before the second World War even; companies like Phillips and KLM had employee fitness classes, the Dutch Post Office was involved, and since then, in a good number of European countries, programmes have been developed. In Japan and the United States, a rapidly increasing number of corporations have developed employee fitness programmes, running the whole gamut from very simple basic kinds of opportunities to a very sophisticated set-up. We have been fortunate during the last few months to have people from our staff, and particularly Mall Peepre, visiting in Europe. She has come back with a wealth of information, slides and so on that we have put together along with what is going on, to our knowledge, in Canada and so I hope that you will enjoy the presentation by Mall Peepre and Sandy Keir of the Recreation Canada staff.

Sandy Keir: Mr. Chairman, Ladies and Gentlemen.

Thank you very much, Cor. As Cor has said, taking half my opening remarks, there are a variety of programmes going on in many places, and what we are going to show you and talk about this morning is not necessarily representative of everything that happens in these countries. The whole variety of programmes that Cor has mentioned ranges from using the simplest type of facilities right through to some very complex and ex-

pensive layouts. The variety is not only in facilities but in the type of leadership provided to employee fitness programmes; the organization of these programmes; the costs of the programmes to the individuals taking part, and even the reasons for having the programmes. Because of the cultural differences, climatic conditions and various other reasons, it is quite difficult sometimes to transfer a programme which seems to be suited to a particular country, into a Canadian situation, so we always have to remember that we learn from seeing other programmes but we can't necessarily duplicate or transfer. In Russia, in China, in Japan, in several other countries, the programmes are for the most part, compulsory for employees to take part in and they are really the accepted thing, as part of the employment conditions. But again, I find it very difficult to see in most Canadian situations a whistle going at a certain time of the day, people stepping back from their machines, and doing their one, two, three in time with the music.

Mall and I would like to divide our presentation into three areas: the first is to look at employee fitness or physical activity while people are in training, either training to qualify for a job, or training to upgrade their position, or to improve their level of employment; in many cases, we do take people before employment and we train them for the particular and specific thing that they have to do. For example, in specific occupations, and we are talking here about the Finnish police force – we talk about the heavy physical and mental demands that are made on policemen. In Finland, they find that they are members of an occupational group which have one of the highest heart disease rates in their country. These policemen undergo lung and heart function tests, as part of a fitness appraisal, not only as rookies in their training, but regularly during their careers. Part of their ongoing training is to take part in conditioning programmes.

The new Ministry of Transport Training Institute which is being built in Cornwall, Ontario, will centralize the training of all Department of Transport personnel in Canada, and this includes meteorologists, air traffic controllers, sections of the coastguard and various supervisory and managerial positions. In planning their facilities and their curriculum, they are going to try and include physical activity programmes and testing in the training of personnel for the Department of Transport. It is probably as important to train a prospective air traffic controller how to handle his stress and his tension, how to control his body weight, how to keep himself in good physical condition and actually keep himself mentally alert, as it is for him to learn to use the complicated equipment such as radar screens, computers, etc. So that in the same programme, they are looking at not only how they train people for the specific job, but how to inform them how their lifestyle affects the job they are going to do.

In the federal government, many training courses for middle and upper management, language training and other technical matters are now beginning to include educational materials on the role that physical activity plays, the role that nutrition plays, alcohol, smoking, etc. and its relationship to a person's ability to do their job. For example, the C.A.P. (Career Assignment Programme) is a group of middle management people who are selected from various departments and spend three months in a training course in residence, before moving out into a variety of managerial positions. For five years, these courses have been going on, but last year there was an opportunity to not only include the specific skills of management technique, computer science, etc. but also to take a look at how the lifestyle of a manager affects the kind of job that he is going to do. It was interesting to note, during their three months in residence the kind of lifestyle they were practising; fairly competitive people spending from early morning right through to late at night in a competitive atmosphere, smoking too much, eating too much of the wrong kinds of foods, living a lifestyle the opposite

to that which the medical profession tell us is beneficial for a person in a stress type of job. So, included now on a regular basis in this Career Assignment Programme are regular physical activity sessions, lectures to indicate the role of nutrition, smoking, alcohol abuse and so on, as far as that person is concerned. This has become an integral part of their programme.

The International Centre in Leesburg, Virginia, of the Xerox Corporation will be taking up to 1,000 people from sales and services personnel from all over Canada and the United States. They will spend four weeks in training at this Centre before they go out to their specific jobs. Included in their facilities are a swimming pool and a large gymnasium and recreational facilities, so that the people in the training programme at Xerox can be exposed to recreational and fitness activities. We are going to hear more about this, because we are fortunate to have Mr. Brent Arnold with us at our Conference who is the Recreation Director of the Centre.

The range of programmes in Canada and the United States is very broad and sometimes different from those in Europe. As Cor said, Mall Peepre had an opportunity to visit some of these centres in Europe and observe some of the things that they incorporate into their programmes.

Mall Peepre

Thank you, Sandy. I was very fortunate in having the opportunity of taking an extra week before a conference I was attending in Helsinki and visiting Austria, Germany and Finland to see some of their fitness programmes. Obviously, in such a limited time, it was impossible to get in on everything that was going on, but since everyone was so helpful and eager to show me around, I did manage to visit a wide variety of programmes in five cities.

With regard to the "training on the job" that Sandy has been talking about, the Bosch Company in Stuttgart, West Germany, has two interesting programmes that are quite unique. First of all, every new employee between the ages of 17 and 21, who is right out of high school or university, has mandatory participation, two hours per week, in a physical education programme. This consists of physical activities led by qualified sports' instructors, as well as lectures and discussions on topics such as exercise physiology, heart disease, weight control—all the lifestyle factors that are relevant to fitness and health. This takes place during working hours, and is for one year only. After the first year, any employee can attend a one hour counselling or discussion session once a week, on any of the topics related to family recreation, diet and so on. They have been doing this for about four or five years and found it to be quite effective. The employees, after going through this training programme in the first year, often will continue in the company fitness and recreational programme after that.

After seven years of continuous employment with the company, all employees are eligible to apply to attend a three-week residential course, literally translated as a "preventive cure course". It is a training session, attended by a maximum of 25 people. The site is a mountain resort which is owned by the company, and consists of a full complement of facilities: sports' fields, pool, sauna, fitness testing equipment, gymnasium, hiking trails, etc.

The course consists of physical activity of all different kinds—sports, hiking, gymnastics, etc. fitness testing; counselling and discussion groups, on all topics related to fitness and health. They have long, ten-hour days, and the entire three weeks are in residence. These sessions are held four times throughout the year, and any employee with a good record and good health can apply. The employee has to give one week of his own holiday time for this, and the company then gives him two weeks of paid leave and covers all the expenses involved. In a way I guess it might be a type of reward

programme, because they find that many people are applying for this. After three weeks of continuous training in these aspects, there has been considerable impact on the employees' attitudes toward the effects of lifestyle habits on their personal fitness, as well as a noticeable improvement in certain aspects of fitness, social interaction and physical activity habits.

From this area, I would like to move to rehabilitation and organized preventive programmes. The question of who is responsible for rehabilitation is an extremely difficult one, since there is such a fine line between where prevention ends and rehabilitation starts.

One main area of interest in Canada lately has been that of cardiac rehabilitation. There just simply are not enough facilities for all persons who need cardiac rehabilitation to be able to go to a specialized, supervised, exercise programme. In the larger cities perhaps, but for the most part, it is not available to all Canadians. This is one aspect that I asked about frequently in Europe, but here the cultural differences that Sandy was talking about come in, in that most of the countries in Europe have socialized medicine, and thus have extensive cardiac rehabilitation programmes run by their State medical care programmes. Therefore, the companies were not in any way involved and really did not need to get into that field. If a person needs that type of prevention or rehabilitation programme, he is simply referred to the State medical care programme.

I would like to describe a few of the rehabilitation programmes that I was able to observe firsthand. First of all, in Austria, the Workmen's Compensation Association is quite active. They have two types of centres, which in many ways are similar to some of the centres we have here in Canada. One type is residential rehabilitation centres and the second type is out-patient centres for the retraining of persons with cerebral injuries. They have found that with the residential centres, a total programme of psychological counselling and group therapy coupled with personalized physiotherapy, as well as group programmes of fitness

and recreational sport produced a better result than simply physiotherapy on an out-patient basis for a specific injury. The people come to the centre for a period of two weeks to six months, depending on the severity of the injury or illness, and within that time, the programme includes well-organized group fitness classes and recreational activity led by specialized instructors.

An interesting thing that I noticed right away at one centre was that all the nurses and physiotherapists were dressed very casually, either in sweat suits or T-shirts, which gave a slightly different atmosphere—the whole centre looked somewhat like a sports training school rather than a hospital. It is felt that this has a beneficial effect on the people who have to be there for long periods of time. One other interesting factor, is that the Workmen's Compensation Association has a cost-sharing arrangement with certain companies for facilities construction. What they do is provide the money for construction of a fitness or sports' facility, and then the company that they are entering into this agreement with is responsible for the maintenance, administration and leadership for the centre. The handicapped and rehabilitation programmes can use it 50% of the time, and the private companies use it 50% of the time for their own employee programmes. They have twelve of these cost-sharing situations presently, and it is felt that they work quite well.

In Finland, at the Postipankki headquarters in Helsinki, they have a programme called "rehabilitation", but, in a sense, it is perhaps more preventive. The women involved are referred by the company doctor to a special class for persons starting to develop musculoskeletal problems as a result of the sedentary nature of their jobs. The intent is to catch them before they develop to the point where the person has to take time off work to go for a full-scale medical rehabilitation programme. The women come to the one-hour session three times per week, during office hours, for a ten-week period. At the time that I visited them they were in about the sixth week, with the classes progressing very well. I think the results will be very interesting.

The exercise class is conducted by an instructor who has extensive training in remedial exercising, beyond her physical education background. Although the session includes light jogging and a warm-up similar to a regular class, the exercises are concentrated mainly on the upper and lower back, neck, and shoulder girdle—the problem areas for posture. Since predictable problems of various types arise from sitting in a particular position for many hours at a time, age was not a factor in determining frequency of these problems; the age range of participants was 25 to 57 years.

An interesting aspect is that the women all do the same kinds of exercises in varying degrees of difficulty, even though they might have slightly different problems. It is felt that the group atmosphere is something that individual physiotherapy cannot duplicate.

At this bank, there is also very good cooperation between the medical Health Unit, the nurses and the fitness directors. For example, one thing I noticed was a continuous slide display in the waiting room outside the nurses' office. This display is changed every week by the nurses, and the week I was there, coincidentally, happened to be Fitness Week. There was a display of thirty to forty slides on various aspects of Fitness and Health, using cartoons and diagrams and so on. To complement this was a table with hand-outs on recreational facilities in the city, fitness trails and how to get to them, and general hand-outs on home exercising, etc. (These details are prepared in conjunction with the fitness directors, but it was the nurses' initiative which kept the programme going.)

I was very impressed with another undertaking by the nurses at the same company. I walked into a small room at the end of the nurses' unit where they had a lovely table with flowers and candles and a huge tray of sandwiches. I was secretly thinking how nice it was of them to have prepared all this just for me, when I found out that each Monday afternoon the nurses hold a small reception for a couple of hours during which time any employee is welcome to come down, and chat with them on anything related to

health. The intent is, also, to show them low-calorie, low-fat snacks and hors d'oeuvres which they can prepare in their own homes. The day I was there they had very fancy open-faced sandwiches with rye bread, cheese, pineapple, smoked fish—along with an outline of exactly how many calories and how much cholesterol there was in each. They hoped that the women would take these ideas home, and at a party, serve something that maybe has a couple of hundred calories rather than 800 calories. The food cost is covered by the company, but the nurses, themselves, originated the idea and prepared all the snacks. They estimated that 80% of the workers in that building passed through there once a month for one reason or another. Another area of cooperation between medical and fitness personnel is the fitness testing, which is administered by the fitness directors to anyone wishing it.

The Unilever Company in Hamburg has a slightly different approach to fitness testing. In their medical health unit, they have a bicycle ergometer, ECG, defibrillator—all kinds of equipment necessary for sub-maximal stress testing—and each employee over the age of forty receives a mandatory stress test once per year. This is administered by a trained nurse; however, there is a doctor on duty two days per week at the Health Unit. Any other employee who wishes to have a fitness test simply for his own interest, can make an appointment and have it done. As well, the nurse and doctor provide counselling services related to the cardiovascular fitness testing, and then refer the employee to the fitness director for counselling related to exercise.

One other aspect of awareness of health was evident at the Edeka Company in Hamburg. They provide a choice of two very low-cost (50¢ a day) lunches for their employees. One is just a regular meal of meat, potatoes, vegetables, dessert, and the other is a low-fat, low-calorie meal for those who wish to diet. Beside the cafeteria line, there is a list of the number of calories in each item of food. The hope is that by being exposed to this type of information, the employees will develop better nutritional habits on their own.

Many countries have preventive programmes that are perhaps a little less subtle and more medically oriented. Sandy is going to outline examples of some of these.

Sandy Keir

One type of preventive institution in Russia that plays a part in their total fitness programme is the "Preventorium" which is attached to many large factories. These preventoria are equipped with modern swimming pools and recreational facilities, and the objective is to provide pleasant recreation and fitness programmes for all the workers. For about a month or a month and a half, workers and employees may spend time at these preventoria after work, and during this period they are under the supervision of doctors who test and prescribe treatment: diet and exercise. In this way, preventive therapy such as physical activity, the improvement of sleeping habits, diet, can be carried out. There are many such preventoria in the USSR at the present time. Quite often in Europe they try to identify potential problems—high-risk people for heart disease, nervous tension and so on, and try to get these people away from the job and the cause of the problem and try to rehabilitate them before the major problem can occur. In addition, the preventorium is equipped with not only swimming pools but hair-dressing salons for the ladies, and massage and saunas for relaxation. In Russia, they also have physical culture groups that are organized for all workers in their major plants. The workers are trained in various age groupings, by a physical educator and under the supervision of a medical doctor. Jogging, calisthenics and exercise classes are used extensively even with older workers as part of a health maintenance approach. Another place we had a chance to visit was a large Iron Ore factory in Northern Sweden, and their programme was interesting in that they used physical activity for rehabilitation for people who had injuries in the mine, so that instead of a person staying at home for two or three months

they were brought back at the earliest possible time and rehabilitated through physical activity. Then they received a fitness appraisal, and from this fitness appraisal it was decided just what level of physical activity the person could take part in. The medical director of the company worked very closely, as Mall has said, with the physical fitness staff who are doing the testing and the assessment.

Another thing we noticed in Sweden was the emphasis on very pleasant, colourful surroundings to try to encourage and motivate people to take part in programmes. I think in the next couple of days at this conference the word motivation is going to be used frequently and with regard to facilities they should be available and convenient, light and airy, and provide a variety of approaches.

The third area, and probably the one we would like to spend the most time on, is fitness programmes on the job, or fitness programmes available to employees on a day to day basis, not necessarily for therapy, training and rehabilitation. Again the range in this is tremendous; all the way from non-equipment, non-leadership programmes, of a very modest nature through to very comprehensive fitness programmes for employees.

An example of one approach being taken by large corporations in big cities is in downtown Manhattan in New York. The Exxon Corporation has three or four thousand people in a very large building and their fitness facility is on the 39th floor of the building. Only the top hundred and fifty executives are involved in their programme, so that in places we find that the programmes are directed to a specific group in the corporation rather than to all employees. Their programme features a small well-equipped room where people come up for a few minutes every day, and they can take part in a programme devised by the Fitness Director and individually move around on a prescribed circuit for activity, usually based on the use of the bicycle, weights or the treadmill. Again at the New York Life Insurance Company their facility is a small room containing a couple of treadmills, two bicycles and a place for people to exercise, and once again it was just a few

people selected from the top executive level who take part in these programmes.

A third place we had a chance to visit in New York was the Western Electric Headquarters in downtown Manhattan. Their facility was located in the fifth sub-basement of a large office building, where they had a small jogging track, showers and exercise facility. There were five thousand people in the building yet only 68 people in the programme, who were sent by the medical director from all levels in the company. This was almost, again, a therapy or a rehabilitation kind of a programme; another approach to physical fitness is through testing and motivation. Last year, the Manufacturers' Life Insurance Company in Toronto decided to make people more aware of physical fitness and the role that it plays. So theirs is a non-equipment, non-leadership programme—really an awareness campaign and it comprised two components. One was to allow selected employees to get some idea of what their fitness level was, and a group of people were tested, using bicycle ergometers. The use of the testing programme was to create an interest in their own fitness. Following this, there was an organized campaign of awareness—posters, material in the office newspapers, etc., to try and identify the activities that they should do. So, without providing facilities, without providing leadership—the awareness was created, people were encouraged to take part in physical activity when they went home and on the week-end, and so on. It is another approach to an employee fitness by creating an awareness to physical activity without getting involved into directly running programmes. The variety in programmes is evident from the very active physical programmes as we have seen where people ride bicycle ergometers, jog, etc. to the other end of the spectrum, a very mild almost passive exercise that people take part in. This type of mild programme is quite popular in Sweden and Holland, and Mall best can describe what is called a fitness break rather than a coffee break.

Mall Peepre

The concept of exercise breaks during the working day is not a new one for Europeans; however, I found that people had mixed feelings about them. Some people thought they were very good, some felt they were of little benefit; but I did see two programmes that seemed to be working quite well.

The general concept is that for a very short period in mid-morning and mid-afternoon, the workers take a five to seven minute break where they do some simple exercises. The idea is to stimulate circulation, relieve boredom and relax tensed muscles. The Postipankki in Helsinki has volunteers in each office area who are trained by the fitness director once a year in a short training course. The fitness director still goes around from time to time to supervise them, however. The kind of exercises they concentrate on in this particular office, are exercises for secretaries who have been working all day or all morning at the typewriter, and have developed tenseness in their shoulder and arm muscles, and their fingers have not been really relaxed for a long time. They do various kinds of stretching, flexibility, shoulder movements, etc. It is a voluntary thing, so that the people who do not want to participate simply continue on with their work. This seems to work best in an office area that has 8 to 10 people in it.

The Unilever Company headquarters in Hamburg has large open-landscaping concept offices, so they have a little bit more room and are able to be more active. They have a small tape-recorder that the leader turns on and it has music and voice instruction, with tapes that have been prepared in advance by the fitness director. During my visit to one office, some people continued with their work right through the break, and did not even look up while all this was going on.

The other interesting aspect is that most of the companies I consulted have found that this type of programme appeals more to women, and they have had mixed success with men. One explanation was that in their particular situations, most of the employees were women,—various levels of secretarial and clerical

staff. (This afternoon you will have a chance to participate in a short demonstration of an exercise break, so that you really get the feel of it.)

From this simple, basic, no-cost type of exercise programme, I would like to move to the kind of whole-company programme that has a specific fitness centre with complete facilities. The one I visited in Frankfurt was the Deutsche Bundesbank Headquarters, one of the largest complexes. (I don't know why it is the banks who end up with the nicest facilities but it seemed to be the case everywhere I went!) The Bundesbank has a complete centre—a gymnasium, swimming pool, etc.; and I visited an organized fitness class, men and women, that takes place after working hours. The woman leading the class was very slim and fit, and looked 20 years younger than her sixty-two years. She was just a phenomenon—the men had trouble keeping up with her!

Besides one full-time fitness director, for each individual recreational sport, they hire part-time instructors who come in and supervise these activities after working hours, evenings and weekends. The bowling alley with two lanes was very much in demand, and apparently most major fitness centres have them. They also have a small bar-restaurant which is open after 4.00, in the evening. The helpful thing was that the workers could sit down and have a sandwich or beer after work, and then were more likely to stay for the evening and take part in the fitness and recreation programmes.

The pool at the Bundesbank is a beautiful one. During the day, when the workers are not allowed to use the pool, it is loaned out, free of charge, to handicapped groups, pensioners, as well as to schools who want to give lessons, so that the pool really gets maximum use. Between seven and nine in the morning and four and ten in the evening, the pool is used by employees and their immediate families and of course it is open on weekends as well.

The cost for using the whole fitness centre is one dollar per month for each employee and any member of the immediate family who wants to join, so that the company really covers 80-90% of the costs involved in maintaining the centre, and running special programmes. The dollar that they pay really goes towards hiring instructors.

One of the first questions I asked them was, why such a beautiful, expensive centre? The main reason was that they felt once they had an employee whom they had trained, and whom they wanted to keep, it was really worth their while to make that person happy—make him want to stay and continue working with them.

I was also able to tour the facilities at the Reemet Company in Hamburg, the largest cigarette manufacturer in West Germany. They have a full fitness complex, but in contrast to the Bundesbank, they do not have any organized programmes. Rather, they simply have a man who is supervising the facilities as the director; and the gymnasium was open after work to anyone who wanted to come in and use it. I believe they had one or two scheduled fitness classes, but other than that it was open for general use.

Many ping-pong tables were in evidence, and as a matter of fact, seemed to be prevalent in just about all the centres. Most of the companies which do not have fitness centres put ping-pong tables in every 'dead space,' so to speak—in the corners of hallways, and front foyers, wherever they could find the room; because employees really like taking 5-10 minutes on a coffee break or noon hour to do something that is a little bit active and interesting. At the Reemet Company the pool and facilities are open 24 hours a day. Because they work on a three-shifts-a-day basis, the workers can use them before and after their working hours, while their families are welcome to come in any time and on weekends. They have a lot of children using the pool regularly, but there are no formal classes of instruction.

As well, they have a small lounge with a bar and restaurant, and at 3.00 on the afternoon I was there, there were quite a number of pensioners present. These are people who used to work with the company, and are still welcome to come back and keep on using the facilities after retiring, for activities such as playing cards and swimming. Above this lounge area is a special room with chess tables that also has a stereo, so it can be used for small parties and dances. Again it is just a matter of the employee going and booking the area through the director.

On a smaller scale, the Edeka Company in Hamburg has a small gymnasium just barely big enough for one exercise class at a time, but they use the space well. All kinds of exercise equipment is squeezed into a balcony for individual programmes. They do not have a full-time fitness instructor, but in the evenings from 5.30 they have a part-time instructor who comes in to give classes and personal counselling for anyone who wants more information. The people here come and exercise on their own, for the most part.

Along this same line of simple basic facilities, the Postipankki in Helsinki had a few elements worth pointing out. Their exercise area was a "dead space" in the basement that was fixed up. It is not more than 50' x 50', but by putting in all kinds of exercise equipment and mats on the floor, they really used the space to the maximum. Considering how small a room it is, they can still accommodate up to thirty people by having a group programme in the centre of the room, while individuals can be working on the equipment around the walls. Extra equipment here includes a treadmill, bicycles, weight-training apparatus, a piano, etc.

The Postipankki has two full-time fitness directors—a man and a woman, who also rent facilities outside and plan programmes of different recreational sports. The exercise room is simply for organized fitness classes, as well as individual fitness programmes that are prescribed for people by the fitness directors, while all other activities are located in community facilities. In this particular bank, they get 35% of the people participating in

their fitness and recreation sport programmes, which is higher than average.

Perhaps scaled down a little from this is an example of a small fitness room which is used for individual exercising only, having every conceivable piece of exercise equipment, with posters on the walls showing people how to use them. The one I visited is on the first floor of the German Sports' Federation Office building, so maybe that explains why it is so attractive. However, it is apparently quite typical of a small building where they cannot afford a larger facility. Since they have small change rooms and shower cubicles for men and women adjacent to the room, persons desiring a more vigorous programme can supplement the exercise equipment with an outdoor walk or jog.

The next area that I would like to talk about is the large companies who do not have facilities yet still manage to have fairly elaborate and complete fitness programmes. For example, the Bosch Company in Hamburg (they have one hundred and twenty subsidiary companies in West Germany) hired three full-time staff at their headquarters in Hamburg to supervise the fitness directors at all the smaller companies. They feel that, financially, it is better for them to rent facilities close by, after working hours, than it would be for them to build enough facilities to service all these 120 companies.

In one example case, they rent a small gymnasium at a local elementary school I visited out in one of the suburbs of Hamburg. A group from one of their small plants out there has a mixed class once per week starting at 5.00 p.m. For the first half hour, there is an active group exercise class. Then, the men play indoor soccer while the women play volleyball, for the next half hour or so. I was impressed with the fact that they were all having a lot of fun, regardless of skill level. Afterward they had a short swimming programme. The first part was a supervised programme of exercises in the water, ending up with a free swim afterwards.

The one problem that we face in Canada is a shortage of swimming pools in some towns. In Germany, they are fortunate because many of their elementary schools have small pools, and it is a very easy matter for companies to rent them in the evenings.

At the Bosch Company, I should mention, they also have a special fitness magazine, and participation award system, which they feel has really helped to encourage their employees to participate in recreational sports such as soccer, volleyball, skiing, hiking, swimming, etc. The competitive sports are really played down, so the emphasis is on just taking part in something active, with friends.

The Unilever Company Headquarters in Hamburg has not built any specific indoor facilities of their own for recreational activities, and must rent space in the community. One way they were able to contribute to the community and also provide a facility for themselves, was by building a small "fitness" trail on public park land, adjacent to their plant, so people from the surrounding area were able to use it as well as their own employees. The outdoor "Fitness Trail" concept hails from Europe, but is gaining popularity in Canada very quickly. A trail of this type consists of a number of loops for jogging, with exercise stations constructed of wood throughout its length. It can be fairly inexpensive and be used for quite a few months of the year.

The Unilever Company administers its recreation and fitness programme similarly to the Bosch Company, in that the Fitness Director at Headquarters supervises, to some extent, the part-time fitness directors at subsidiary companies throughout Germany. The interesting thing at Unilever was that they found most of the participants in their fitness and recreational activities were the middle-level workers, rather than executive or management level personnel or unskilled labour in the plants.

Adjacent to many of the fitness or sport centres are playgrounds, and the Unilever Company, on weekends, provides supervised physical education for pre-school and school children, while the

parents are participating in their particular recreational activity. The children are getting not only babysitting services, but also supervised instruction in motor development and creative play by qualified physical educators.

A step down from providing basic facilities or renting facilities, are the companies that simply cannot afford to do either, and one way that some companies get around this is by providing part of the cost of an employee joining a fitness or recreation centre in the community. For example, the IBM Company in Vienna, Austria, pays 80% of the fee for any employee who wishes to go to a local fitness centre that has been approved as being of superior quality. Many of the countries such as Austria, where they do not have quite as much money as some of the other countries, have found this to be a good solution.

I would just like to take a minute here to mention that while I was in Germany, the people at the European Council for Company Sports and Fitness programmes were very helpful with all kinds of printed materials. Unfortunately, most of it is in German, but they very kindly gave us permission to translate and reprint many parts of it. I think there is some very good, relevant information that can be translated into English and French, and be available through our office in a few months time. Most of the individual companies I visited were very anxious to establish communication with companies in Canada and the United States. As well, they welcome visitors, so if any of you are going to Europe and think you might have time to drop in on them, I would be happy to give you the names and addresses of the contacts.

There are a lot of progressive and interesting programmes in Europe, but after coming back here and reassessing the Canadian scene, I really do not feel that we in Canada need to feel inferior. I think we are behind only in time, and it should be just a matter of a couple of years before fitness programmes in business and industry are as prevalent and well-received as they are in Europe. Can-

ada has a lot of people with ideas and talents in this area, and I feel certain that you will agree with Sandy and me after Sandy outlines some of the successful fitness programmes already underway in Canada and the United States.

Sandy Keir

Thank you Mall. Just as there are a variety of programmes in Europe, there are variations in Canada, and we could go right across this country and find many interesting and motivational programmes going on in the area of employee fitness. Right here in Ottawa, 3 years ago, the federal government began some programmes on employee fitness on an experimental basis. You are going to have, as you noticed in your kit, an opportunity this afternoon to go and visit, and I hope take part in an adult fitness programme at one of these centres. The federal government as an employer is definitely interested in physical fitness, both in the personal interest of their employees and in the interest of their performance and their productivity. The Treasury Board section, which is really our Personnel Department, is working on a policy to guide the departments. As all the details of this are not completed as yet, we hope very shortly to have this, and I think it will be interesting to have guidelines regarding what the federal government's role would be on a policy on employee fitness. This, of course, will be developed from the results of experimental programmes in two or three departments. Our own Department of National Health and Welfare has a pilot project in one of our buildings which you will have a chance to visit. The one I think that has been running the longest, for three years, out at the Post Office Department and the Department of Public Works is probably one of the most interesting and it is an example of one way that a company can go about setting up an employee fitness programme. I think the best way to really understand this programme is to see a short film on the subject. This is a twelve minute film which shows the steps that the Post Office Department took in setting up an employee fitness programme. I would like now to

show you just four or five minutes of this film, but the film will be shown this afternoon at the nutrition break, and again tomorrow afternoon. We also have this film available in both French and English for people who would like to borrow it and have some idea of one way of setting up an experimental programme. Looking at some of the things that are going on in employee fitness programmes in Canada today, as you can see, we are still at the beginning of a long road. There is still a lot of research to be done in identifying the role of the employer, the role of the employee, the benefits to the company, the benefits to the person and many other factors.

We hope that, in the next two days at this conference, the first steps will be taken to come up with the recommendations that will guide both employers and employees in formulating policies for implementation of physical activity and lifestyle awareness programmes for all employees in Canadian business and industry.

Editor's Note:

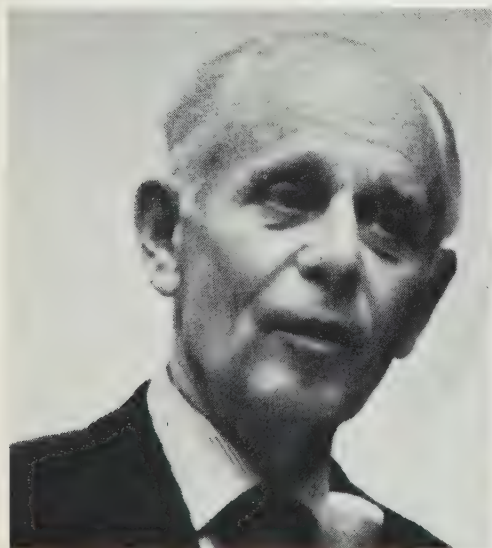
It was not possible to reproduce the 120 slides and the film that were used during this presentation.

STRESS

Dr. Hans Selye

Hans Selye, M.D., is Professor and Director of the Institute of Experimental Medicine and Surgery in the University of Montreal, and was born on January 26, 1907, in Vienna. He is mainly interested in correlations and the holistic approach to medical research. His major contributions were the description of the general adaptation or "stress" syndrome, anaphylactoid edema, calciphylaxis, calcergy, and steroid anesthesia. At present, most of his research is concerned with the prophylaxis of cardiovascular disease and a group of hormones which he calls "catatoxic steroids".

Dr. Selye is the author of 28 books and more than 1400 articles in technical journals. He holds earned doctorates in medicine, philosophy and science, as well as 16 honorary degrees conferred on him by universities in Argentina, Austria, Canada, Chile, Czechoslovakia, Germany, Guatemala, Italy, Japan, Uruguay and the U.S.A. He is a Fellow of the Royal Society of Canada and an Honorary Fellow of 42 other scientific societies throughout the world. A recipient of numerous honorary citizenships and medals, including the Starr Medal (the highest distinction of the Canadian Medical Association), he has been made a Companion of the Order of Canada, the highest decoration awarded by this country.



Everybody knows what stress is and yet nobody knows what it is. The word stress, like success, failure, or happiness, means different things to different people and, except for a few specialized scientists, no one has really tried to define it although it has become part of our daily vocabulary. Is it effort, fatigue, pain, fear, the need for concentration, the humiliation of censure, loss of blood, or even an unexpected success that requires complete reformulation of one's life? The answer is yes and no. That is what makes the definition of stress so difficult. Every one of these conditions can produce stress, and yet none of them can be singled out as being "it" since the word applies equally to all the others as well.

Yet how are we to cope with the stress of life if we cannot even define it? The word has been extremely difficult to define in English, and a word for "stress" did not even exist in many other languages, including our own other official language, French. After a lot of deliberations, and after convincing numerous authorities, I proposed my own term for the French vocabulary. Now we have an accepted word for stress in the French language, "c'est le stress".

What exactly is stress?

The businessman who is under constant pressure from clients and employees alike, the air traffic controller who knows that a moment of distraction may mean death to hundreds of people, the athlete who desperately wants to win a race, and the husband who helplessly watches his wife slowly and painfully die of cancer—all suffer from stress. The problems they face are totally different, but medical research has shown that, in many respects, their bodies respond in a stereotyped manner with identical biochemical changes meant fundamentally to cope with any increased demand upon the human machinery. The stress-producing factors—technically called stressors—are different, yet they all produce essentially the same biological stress response. This distinction between stressor and stress was, perhaps, the first important step in the scientific analysis of that most common biological phenomenon which we all know only too well from personal experience.

Since the term stress has been used quite loosely, many confusing and often contradictory definitions have been formulated; hence, it will be useful to add a few remarks stating clearly what it is not. Stress is not simply nervous tension; stress reactions occur in lower animals, which have no nervous system, and even in plants. Stress is not the nonspecific result of damage. We have seen that it is immaterial whether an agent is pleasant or unpleasant; its stressor effect depends merely on the intensity of the demand made upon the adaptive work of the body. As I have explained elsewhere, "normal activities—a game of tennis or even a passionate kiss—can produce considerable stress without causing conspicuous damage."

Stress is not something to be avoided. In fact, as is evident from the definition given earlier, it cannot be avoided; no matter what you do or what happens to you, there arises a demand to provide the necessary energy to perform the tasks required to maintain life and to resist and adapt to the changing external influences. Even while fully relaxed and asleep, you are under some stress: your heart must continue to pump blood, your intestines to digest last night's dinner, your muscles to move your chest to permit respiration; even your brain is not at complete rest while you are dreaming.

Complete freedom from stress is death. Contrary to public opinion, we must not—and indeed cannot—avoid stress, but we can meet it efficiently and enjoy it by learning more about its mechanism and adjusting our philosophy of life accordingly.

But if we want to use what the laboratory has taught us about stress in formulating our own philosophy of life, if we want to avoid its bad effects and yet be able to enjoy the pleasures of accomplishment, we have to learn more about the nature and mechanism of stress. To succeed in this, we must concentrate on the fundamental technical data which

the laboratory has given us as a basis for a scientific philosophy of conduct. Examination of the data seems to be the only way to find purpose in life without having to fall back upon traditional beliefs whose acceptance depends primarily on indoctrination.

Now, let me give you the official definition of stress as we see it. It's very simple, but it has to be remembered if you want to use the concept. *Stress is the nonspecific response of the body to any demand.*

In order to understand this definition we must first comprehend what is meant by "nonspecific". Each demand made upon our body is in a sense unique, that is, specific. When exposed to cold, we shiver to produce more heat and the blood vessels in our skin contract to diminish loss of heat from the body surface. When exposed to heat, we sweat because evaporation of perspiration from the surface of our skin has a cooling effect. When we eat so much sugar that the blood-sugar level rises above normal, we excrete some of it and try to activate chemical reactions which will enable us to store or burn up the rest so that the blood sugar may return to normal. A great muscular effort, such as running up many flights of stairs at full speed, makes increased demands upon our musculature and cardiovascular system. The muscles will need more energy to perform this unusual work; hence, the heart will beat more rapidly and strongly, and the blood pressure will rise to accelerate delivery of blood to the musculature.

Each drug and hormone causes such specific actions: diuretics increase urine production; adrenalin augments the pulse rate and blood pressure, simultaneously increasing blood sugar, whereas insulin decreases blood sugar. Yet, no matter what kind of derangement is produced, all these agents have one thing in common: they also make an increased demand upon the body to readjust itself. This demand is nonspecific; it requires adaptation to a problem, regardless of what that problem may be. That is to say, in addition to their specific actions, all agents to which we are exposed produce

a nonspecific increase in the need to perform certain adaptive functions and to re-establish normalcy, which is independent of the specific activity that caused the rise in requirements. This nonspecific demand for activity as such is the essence of stress.

From the point of view of its stress-producing, or stressor, activity, it is even immaterial whether the agent or situation we face is pleasant or unpleasant; all that counts is the intensity of the demand for readjustment or adaptation. The mother who is suddenly told that her only son died in battle suffers a terrible mental shock; if years later it turns out that the news was false, and the son unexpectedly walks into her room alive and well, she experiences extreme joy. The specific results of the two events, sorrow and joy, are completely different, in fact, opposite to each other; yet their stressor effect—the nonspecific demand to readjust to an entirely new situation—may be the same.

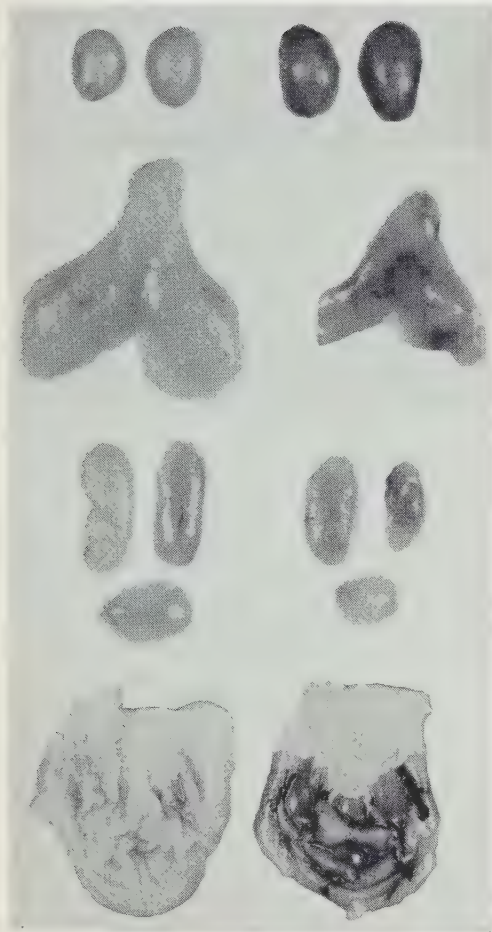
It is difficult to see how such essentially different things as cold, heat, drugs, hormones, sorrow and joy could provoke an identical biochemical reaction in the organism. Yet this is the case; it can now be demonstrated by highly objective quantitative biochemical determinations that certain reactions of the body are totally nonspecific and common to all types of exposure.

How could different agents produce the same result? Is there a nonspecific adaptive reaction to change as such? In 1926, as a second-year medical student, I first came across this problem of a stereotyped response to any exacting task. I began to wonder why patients suffering from the most diverse diseases have so many signs and symptoms in common. Whether a man suffers from severe loss of blood, an infectious disease or advanced cancer, he loses his appetite, his muscular strength and his ambition to accomplish anything; usually the patient also loses weight, and even his facial expression betrays that he is ill. What is the scientific basis of what I thought of at the time as the "syndrome of just being sick"? Could the mechanism

of this syndrome be analyzed by modern scientific techniques? Could it be reduced to its elements and expressed in the precise terms of biochemistry, biophysics and morphology? Could this reaction be subjected to scientific analysis?

It was not until 1936 that the problem presented itself again, under conditions more suited to analysis. At that time I was working in the Biochemistry Department of McGill University, trying to find a new hormone in extracts of cattle ovaries. I injected the extracts into rats to see if their organs would show unpredictable changes that could not be attributed to any known hormone. Much to my satisfaction, the first and most impure extracts changed the rats in three ways: (1) the adrenal cortex became enlarged, (2) the thymus, spleen, lymph nodes, and all other lymphatic structures shrank, and (3) deep, bleeding ulcers appeared in the stomach and in the upper gut. Because the three types of change were closely interdependent, they formed a definite syndrome. The changes varied from slight to pronounced, depending on the amount of extract I injected.

At first, I ascribed all these changes to a new sex hormone in the extract. But soon I found that all toxic substances—extracts of kidney, spleen, or even a toxin not derived from living tissue—produced the same syndrome. Gradually my classroom concept of the "syndrome of just being sick" came back to me. I realized that the reaction I had produced with my impure extracts and toxic drugs was an experimental replica of this syndrome. Adrenal enlargement, gastrointestinal ulcers and thymicolymphatic shrinkage were the omnipresent signs of damage to the body when under disease attack. The three changes thus became the objective indexes of stress and the basis for the development of the entire stress concept. (Fig. 1)



The reaction was first described as a "syndrome produced by various noxious agents", and subsequently became known as the General Adaptation Syndrome (G.A.S.). The name "alarm reaction" was given to the initial response, as it represents the somatic expression of a generalized "call to arms" of the body's defensive forces.

The alarm reaction, however, was evidently not the entire response. Continued exposure to any noxious agent capable of eliciting this reaction results in a stage of adaptation or resistance. In other words, no organism can be maintained continuously in a state of alarm. If the agent is so drastic that continued exposure becomes incompatible with life, the animal dies during the alarm reaction within the first hours or days. If it can survive, this initial reaction is necessarily followed by the "stage of resistance". The manifestations of this second phase are quite different from—in many instances,

the exact opposite of—those which characterize the alarm reaction. For example, during the alarm reaction the cells of the adrenal cortex discharge their secretory granules into the bloodstream and thus become depleted of corticoid-containing lipid storage material; in the stage of resistance, on the other hand, the cortex becomes particularly rich in secretory granules. Whereas in the alarm reaction, there is hemoconcentration, hypochloremia and general tissue catabolism, during the resistance stage there is hemodilution, hyperchloremia, and anabolism, with a return toward normal body weight.

Curiously, after still more exposure to the noxious agent, the acquired adaptation is lost again. The animal enters into a third phase, the "stage of exhaustion," which inexorably follows as long as the stressor is severe enough and applied for a sufficient length of time. Because of its great practical importance, it should be pointed out that the triphasic nature of the G.A.S. gave us the first indication that the body's adaptability, or "adaptation energy" is finite since, under constant stress, exhaustion eventually ensues. On the other hand, the fact that even the same stressor can cause different lesions in different individuals has been traced to "conditioning factors" which can selectively enhance or inhibit one or the other stress effect. This conditioning may be endogenous (e.g., genetic predisposition, age, sex) or exogenous (e.g., treatment with certain hormones, drugs, or dietary factors). Under the influence of such conditioning factors, a normally well-tolerated degree of stress can become pathogenic and cause "diseases of adaptation," affecting one or the other predisposed target area selectively.

Now, let's discuss the mechanics of stress—a tangible influence of stress on the body. Whether a splinter of wood gets under your skin or you are infected by a tuberculosis bacillus or even if you have an allergic reaction, they all produce inflammation. The main biological purpose of this is to put a barricade around the intruder in order to prevent the sickness spreading to the healthy parts

of the body. The inflammation is unpleasant, it hurts, it deforms. If it's in an organ that has to function visibly like a joint, it will prevent motion. However, it is useful in the sense that it demarcates—it's a quarantine.

I produced inflammation or arthritis by injecting a little bit of irritating formalin into the hind paw of a rat. Immediately, the body showed an enormous defense reaction in the form of inflammation around the areas where I injected the formalin. Formalin, in contact with tissue, precipitates and becomes inactive. In itself it is not really damaging. It is what we call an indirect pathogen. It causes no trouble except to the few cells which are there, which become fixed and this is of no particular consequence. The animal should easily eliminate the inactivated formalin, but what causes the real trouble is the animal itself. It over-reacts and produces a tremendous defense reaction against nothing.

There are two types of defense reaction which are inherent in the organization of nature at every level and in every profession, and whether it's a bacterium or a human being makes no difference. There are two types of defense: to put up with things (to tolerate them) or to flee and run away; to avoid battles or to attack and fight them. In our particular case, when the pathogen is innocuous, such as formalin, very little damage is caused and an excessive defense reaction is useless. However, if the pathogen is dangerous, like the tuberculosis bacilli, the little damage caused by inflammation and pain would be a very low price to pay for the defense against general tuberculosis.

The sum total of all the stresses and strains of life add up to what we call tissue aging. Aging is a thing that you can't combat with anything that destroys chemical substances. However, what we call aging is an accumulation of chemical scars in our body and there is some chemical that causes each scar. If you are exposed to a stress, even if it's a mental strain, some chemical substances develop in your body which leave a trace that eventually adds up to aging.

We've developed a technique by which, with complicated chemical procedures, we can artificially age a rat. In a young rat, the skin is free of wrinkles, its back is quite straight, it is very muscular; it is the very picture of physical fitness. At two months of age a rat is sexually mature and its gonads are well developed. It is capable of reproducing itself; it has no trace of atherosclerosis. In fact, it's perfectly healthy. Now, if you give it certain chemicals, in six weeks it will have a senile hunchback. Its tissues have lost their elasticity and it is full of wrinkles. It has lost its teeth and is atherosclerotic. We gave some rats exactly the same treatment as the aged ones above. The only difference was that we gave a cata-toxic steroid which destroyed the aging substances and therefore prevented aging. You can never cure aging this way because the tissues are not directly affected by cata-toxic steroids. They induce fighting enzymes which destroy chemicals that cause the aging. They can prevent aging but cannot make it regress.

One of the prerequisites for our work was a model—an experimental model of a stress-induced cardiac accident. You can produce a cardiac accident by ligating a coronary artery and many other sorts of artificial means. However, this has nothing to do with the problem of coronary heart disease in man. I wanted to develop preparatory treatment—a conditioning similar to the conditioning for aging, which causes predisposition for infarcts. One can fight the conditioning with chemical means—the cata-toxic steroids.

A rat, chemically conditioned for cardiac infarction, was exposed to excessive exercise in a running mill until he was exhausted. He did not have an accident. Another rat was similarly predisposed for a coronary infarct and put into the same tread mill for the same length of time and he developed cardiac infarcts—not one, but innumerable white spots representing dead cardiac tissue. (Fig. 2)



If a rat is conditioned or predisposed by chemical means, to develop a heart attack under exercise, he will do so. If he's not predisposed the same exercise will not damage him.

If the rat is exercised before chemical conditioning, the exercise won't cause an infarct. And, if you continue to exercise him during subsequent conditioning, he can't have an infarct from the exercise because he's "in condition" for it. Now if you condition him and then expose him to some other stress, the heart will remain normal; although he had the same treatment in this region as that one, he was pre-exercised and therefore kept fit.

In another experiment, I used exercise solely as a conditioner and bone fracture as the pathogenic agent. And again the rat was protected. This means that you can demonstrate by objective evidence that making an animal physi-cally fit has a cross-resistance effect.

If I may, I'll speak about one 67 year-old patient I know very well. Following a series of operations, he underwent hip replacement. He has shown you that he can give you a talk and stand on his legs.

If I didn't exercise every day to keep my musculature in shape, I wouldn't be able to be here today.

Now, let us turn to the philosophy of stress. To meet the demands of life, stress is inherent in all human activity, hence, it cannot be completely avoided, but occasionally should be reduced to a minimal maintenance level. This is achieved by the ancient and now increasingly popular practices of transcendental meditation, Yoga, etc. the "relaxation response" (Benson). Yet, these should not be over-done since "shutting down the motor" for too long can have the harmful effects of sensory deprivation (e.g. hallucinations).

The body is not built to take too much stress always on the same part. In stress research we have found that, when completion of one particular task becomes impossible, diversion, a voluntary change of activity, is frequently as good as—if not better than—a rest. For example, when either fatigue or enforced interruption prevents us from finishing a mathematical problem, it is better to go for a swim than just to sit around.

Substituting demands upon our musculature for those previously made upon the intellect not only gives our brain a rest but helps us to avoid worrying about the frustrating interruptions. In other words, stress on one system helps to relax another. Actually, when completion becomes temporarily impossible, a diversion into a substitute activity not only simulates completion, but it does so quite efficiently and usually provides its own satisfaction.

Each person must find a way to relieve his pent-up energy without creating conflicts with his fellowmen. Such an approach not only ensures peace of mind but also earns the goodwill, respect and even love of our fellowmen, the highest degree of security, the most noble "status symbol" to which man can aspire.

This philosophy of hoarding a wealth of respect and friendship is merely one reflection of the deep-rooted instinct of man and animals to collect. It is as characteristic of ants, bees, squirrels, and beavers as of the capitalist who collects money to put away in the bank. The same impulse drives entire human societies to amass a system of roads, telephones, cities, fortifications, that strike them as useful means of accumulating the ingredients of future security and comfort.

In man, this urge first manifests itself when children start to amass match boxes, shells or stickers; it continues when adults gather stamps or coins. The natural drive for collecting is certainly not an artificial, indoctrinated tradition. By collecting certain things, you acquire status and security in your community. The guideline of earning love merely attempts to direct the hoarding instinct towards what I consider the most permanent and valuable commodity that man can collect: a huge capital of goodwill which protects him against personal attacks by his fellowmen.

"Love thy neighbor as thyself," one of the oldest guidelines for purpose and conduct, was propounded to please God and thereby offer security to man. Since our philosophy is based on natural laws, it is perhaps not surprising that, for centuries, throughout the world, so many of its elements have turned up again and

again—in the most diverse religions and political doctrines—though usually supported by mysticism and blind trust in an infallible authority rather than by science.

It is difficult for people nowadays to follow the rule, "love thy neighbour as thyself". This is not very biological—you can't blame a big fish for eating a little fish. Few people are capable of loving their neighbours as much as they love themselves—I have tried it and found that I didn't even like myself!

With a rephrasing of the guideline to "Earn thy neighbour's love", it becomes biologically sound and cannot conflict with any religion or philosophy; in fact, ardent believers in any one of these can use our code to complement their own. In it, they will find scientific support not only for one of the most deep-rooted and generally-accepted religious precepts of the brotherhood of man but also for that of atheistic communism, with its avowed goal: "From each according to his capacities, to each according to his needs" a slogan which otherwise might only encourage laziness. The laws of nature, which we used to construct our doctrine, apply to everybody, irrespective of his formalized and labeled creed.

In summing up, then, the great laws of nature that regulate defense of living beings against stressors of any kind are essentially the same at all levels of life, from individual cells to entire complex human organisms and even societies of men.

The whole translation of laws governing resistance of cells and organs to a code of behaviour comes down to three precepts:

1. *Find your own natural stress level.* People differ with regard to the amount and kind of work they consider worth doing to meet the exigencies of daily life and assure their future security and happiness. In this respect, all of us are influenced by hereditary predispositions and the expectations of our society. Only through planned self-analysis, can we establish what we really want; too many people suffer all their lives because they are too conservative to risk a radical change and break with traditions.

2. *Altruistic egoism.* The selfish hoarding of the goodwill, respect, esteem, support and love of our neighbor is the most efficient way to give vent to our pent-up energy and create enjoyable, beautiful or useful things.

3. *EARN thy neighbor's love.* This motto, unlike love on command, is compatible with man's natural structure and, although it is based on altruistic egoism, it could hardly be attacked as unethical. Who would blame him who wants to assure his own homeostasis and happiness only by accumulating the treasure of other people's benevolence towards him. Yet, this makes him virtually unassailable, for nobody wants to attack and destroy those upon whom he depends.



PHYSICAL FITNESS AND GENERAL HEALTH

Dr. Terry Kavanagh

Medical Director, Toronto Rehabilitation Centre; Assistant Professor, Department of Rehabilitation, University of Toronto; Chairman, Committee on Physical Fitness and Recreation, Ontario Heart Fund; member of Committee on Public Education, Ontario Heart Fund; Track and Field official—Montreal Olympic Games 1976; permanent Committee—Pacific Conference Games; developed the first-ever Exercise Rehabilitation Programme and was in charge of the 8 post-coronary patients who ran in the Boston Marathon in April 1973.



Few of us are physically fit. Many of us are grossly unfit. Apart from the fact that the unfit individual can't run for a bus, is "ground-bound" during an elevator strike, and unprepossessing in appearance when wearing shorts, does it really matter? Is there any evidence that the unfit state is bad for your health?

One way to become grossly unfit is to go to bed for three or four weeks. I know that there are times when all of us feel that a few weeks *bed rest* would do us the world of good, but you may be surprised to discover that the opposite is the case. Studies have been carried out on healthy young men who have been confined to bed for periods of between 3-9 weeks. (1, 2.) Regular tests carried out on these individuals showed a rapid deterioration in many of their bodily functions. For example, the efficiency of their heart action dropped by about 25%, as did their ability to utilize oxygen (measurement of endurance fitness). Their heart size diminished by 7%, and their blood volume also was reduced by 7%. About 1.5% of their muscle bulk wasted away. Calcium excretion through the urine increased to about twice the normal figure, with the result that their bones became soft and fragile. All of the subjects felt constantly tired, their ability to work was drastically reduced and they became apathetic and lacking in initiative. The mere act of standing upright resulted in a racing pulse, a falling blood pressure, and in many cases a frank faint. Quite a catastrophic series of events from the simple act of retiring to one's bed! But even more interesting is the fact that the cardio-respiratory and muscle side effects were prevented or reversed by having the subjects exercise their arms and legs for a mere half-hour everyday while lying in bed; the loss of calcium and subsequent bone changes were obviated by having the men stand beside the bed for one hour in order to allow gravity to act on the axial skeleton. I think the implications of these studies are obvious.

Now let us get out of bed and take a look at our normal everyday routine. Many of us now believe that a large proportion of the ailments which afflict modern man are directly or indirectly connected with his life style; specifically with his lack of physical activity. This is a technical age, and we are required to use our muscles less and less. Not so long ago if a man told you that his job consisted of firing a steel furnace you could safely assume that he was engaged in heavy work. Nowadays this would be a false assumption; much of his working day is spent in an air-conditioned control cab operating the furnace by means of fingertip pressure on a series of control buttons. The result, according to Kraus and Raaß, is the concept of "hypokinetic disease". (3.) These are a series of conditions thought to be due to our chronic lack of exercise. They constitute about 40% of all of our illnesses, and consist of obesity (with all of its attended dangers), coronary artery disease, hypertension in various forms, bone, muscle and joint problems, premature aging, and various vaso-regulatory disturbances such as insomnia, constipation, chronic indigestion, etc.

In a study involving a large group of subjects, Hehl showed that a decrease in daily physical activity was very frequently accompanied by an increase in weight and smoking habits. Leaving aside the ill-effects of smoking, *obesity* itself is a major cause of illness. It is associated not only with diabetes, but also with chest disease, heart disease, high blood pressure, and a tendency towards accidents. We might, then, take a closer look at this all too frequent by-product of our affluent way of life.

Most of us put on weight gradually; so gradually that by the time we are in our 40's we are about 20 pounds heavier than we were 20 years previously. It should be noted that this increase can be achieved by eating as little as 7,000 calories excess food per year!! Once fat, it costs more energy to carry out a given task; we are therefore less inclined to be active. Thus, the "fatty" may indeed eat less, but he still continues to put on weight because he is burning less fuel. The fine

balance between appetite and body weight is achieved through the control of a portion of the brain known as the hypothalamus. Mayer maintains that this hypothalamic control fails to work at the extremes of activity, i.e. when the body is excessively inactive or excessively active. (4.) Studies have been carried out using pedometers and cinephotography which show that the obese individual is much less active, even during recreational games, than his leaner counterpart. Pictures taken at a girls' camp demonstrated very dramatically that the obese girl, when participating in such games as volley ball, net ball, etc, spent a large proportion of game time standing still or moving around sluggishly.

Restriction of diet would seem the obvious way to lose weight. Unfortunately, the results, at least on a long term basis, are not as good as one might expect. The body stores excess food stuff in the form of fat; when the dietary level is reduced below the level of energy expenditure, some of the stored fat must be burned to make up the difference. However, before the fat store is tapped, the body burns glycogen, the name of the substance made from ingested starchy foods and stored in the body for short term energy needs. This substance contains a large quantity of water, breaks down easily, and is responsible for the rapid weight loss of 4-5 pounds which occurs in the early stages of the diet. Thereafter, however, the deficit has to be made up from fat stores, and this substance is much harder to burn.

If, on the other hand, we combine exercise with dieting, we can achieve far better results. It is not just a question of burning off excess fat by physical activity (although that occurs also), but the exercise has an additional value. The fit individual mobilizes and utilizes fat more efficiently than the sedentary subject (I speak here particularly of the endurance type fitness), and in addition probably has a more effective hypothalamic body weight/food intake control system. The exercise session itself also frequently reduces appetite by raising the blood sugar level. Thus, our over-weight indi-

vidual can lose about 20 pounds in one year by the simple process of restricting his diet by a mere 100 calories per day, and burning a similar amount of calories by walking two miles daily.

There is now a fair volume of evidence which strongly suggests that the active individual has 3 times less chance of sustaining a *heart attack*. (5,6,7.) Much of this comes from studies comparing workers engaged in heavy or moderately heavy jobs with sedentary workers. The reasons for this are not as yet clear, and there are some who might even argue that the case for exercise is not as yet proven. For myself, I feel that the weight of evidence is heavily in favour of the beneficial effects of exercise, and I feel that one would be very foolish to await further statistical evidence before advising coronary-prone patients to enter an exercise programme. The changes which occur in the cardiovascular system as a result of chronic exercise are many and varied, and without exception are all advantageous. Other effects of training, such as weight loss, reduction in mental tension, lowering of blood fat levels, more efficient extraction of oxygen by the muscles, are other examples of worthwhile changes affecting other systems.

Musculoskeletal problems are extremely common and are probably worthy of some comments here. Many individuals suffer from *back troubles* by the time they reach middle age. These can be helped immeasurably by the simple process of strengthening their abdominal muscles. As one gets older, and less fit, the abdominal muscles weaken and so are unable to maintain sufficient intra-abdominal pressure to support the spine. As a matter of fact, the beneficial effect of a corset or brace in low back pain is almost entirely due to its compressing effect on the anterior abdominal wall, thus forcing the air in the abdominal cavity backwards where it acts as a stabilizing cushion for the spine.

A famous orthopaedic surgeon once said that *osteoarthritis* of the hip would be much less prevalent if everyone put the hip joints through a full range of movement once or twice a day. Osteoarthritis is a disease which starts in the articular

cartilage of the joint. This structure covers the articulating end of the bones involved in the joint; in osteoarthritis it becomes thinned, fissured and ultimately worn so thin that it no longer protects the underlying bone. We are unable to say why these changes occur. However, it is interesting to speculate that they may be the result, at least to some degree, of insufficient joint movement. We know now that articular cartilage obtains its nourishment from the synovial fluid within the joint; as the joint moves the synovial fluid passes in and out of the upper layers of the cartilage in a manner similar to water being absorbed and then squeezed out again by a sponge. Obviously, this action can only occur if the joint is moved. Certainly the theory is an interesting one and, even if not wholly valid, has some interesting implications, especially in the early stages of the disease.

Whether the state of fitness increases *longevity* is a moot point. There are some investigators who believe that this is so, and certainly one cannot help by being struck by the fact that studies carried out on individuals who have survived beyond their 80th year, all seem to emphasize a life of hard work. This in itself is not, of course, conclusive, and there are obviously many factors involved. Doctor David Kakishvili, a Russian cardiologist is convinced that exercise is the major factor in longevity. He has remarked on the fact that individuals living in small mountain villages, tolerate heart attacks much better than their urbanized relatives. Doctor Leaf, an American cardiologist, after studying the inhabitants of the village of Vilcabanba in Ecuador, many of whom were working centenarians, formed a similar impression; he took up jogging, at age 52, after he returned home! (8,9).

Finally, for those of you who feel that all of the foregoing is too theoretical may I bring the matter closer to home by telling you of a group of men who have obtained invaluable benefit from an endurance training programme. They are

all *heart attack victims*, some of them have had two attacks, and they have just finished the 1973 Boston Marathon. (10). Months of training have resulted in a level of fitness which enables them to do more than they ever thought they were capable of. They, and others like them, are members of the Toronto Rehabilitation Centres' post-coronary exercise class. They are an example of healthy middle-aged men—and their health has been achieved by conscientious and regular training.

On questioning, all of them reported a greater alertness and efficiency in their jobs; this was corroborated by their employers. For those of you who have personally experienced the fit state, this is easy to understand, for those of you who have not, the claims for exercise may seem exaggerated. I would like to suggest that those of you who fall into the latter group start a graduated exercise programme this week. If you carry it out regularly, then I guarantee that when you return to this meeting next year, you will have changed your mind. On that mild challenge I will close my talk.

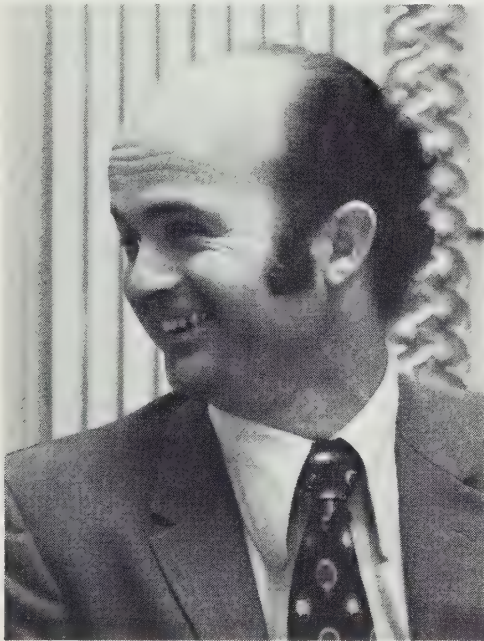
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PHYSIOLOGICAL IMPLICATIONS OF PHYSICAL ACTIVITY

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INTRODUCTION

In order to better understand the possible physiological effects of an employee fitness programme, it is necessary to have a basic knowledge of what exercise is, what the processes in the body are that allow one to do different types of exercise, and how the various systems of the body are affected by repeated exercise (training).

WHAT IS EXERCISE?

Referring to Figure 1, it can be seen that the energy for all the processes in living cells comes from chemical reactions that are either aerobic (in the presence of oxygen) or anaerobic (without oxygen) in nature.

During exercise, the rate of these reactions is increased to provide the energy needed for muscle contractions, transport of nutrients, etc. Considering the diagram in business terms, there are two basic raw materials, glycogen (a simple sugar) and fat that are processed to provide the final product, energy. Analogous to the stock of finished products in a factory, there is a limited amount of energy stored in the cells that can be used without oxygen at the onset of exercise. Thus, it is possible to run for about 10 sec. at top speed without breathing since there is an immediate energy supply available. Since this supply is limited, the runner must stop or slow down to allow time for the regular assembly line mechanisms to provide the energy necessary to continue. However, since there is a time lag in the delivery of oxygen to

the muscles from the outside, if he wishes to continue running, he must begin to borrow from the limited amount of energy available from the anaerobic transformation of glycogen. Although this process provides energy more rapidly, it has the disadvantages of being expensive and of producing an undesirable by-product, lactic acid. If too much lactic acid is present, it will inhibit the efficiency of the chemical reactions, thus providing less energy. It is the presence of lactic acid that gives one the feeling of fatigue or heaviness in the muscles and forces him to stop.

The more efficient method for manufacturing energy is the aerobic transformation of glycogen and fat. Since there are many more steps in the assembly line, this process is slower, but there is the added advantage that the supply of raw materials is generally unlimited. That is, assuming that the person continues to eat or has a stockpile of raw material already available in the form of fat, he can continue to manufacture energy aerobically. Fat is thus a reservoir of potential energy. If there is too much fat, however, a lot of energy will be required just to transport the excess weight. This would be analogous to building more warehouses and hiring more personnel, just to maintain a large stockpile of raw material which is readily available and cheap.

With exercise of low intensity but long duration, the metabolism becomes more and more aerobic and the systems involved in the transport of oxygen (heart, lungs, blood vessels) become more ac-

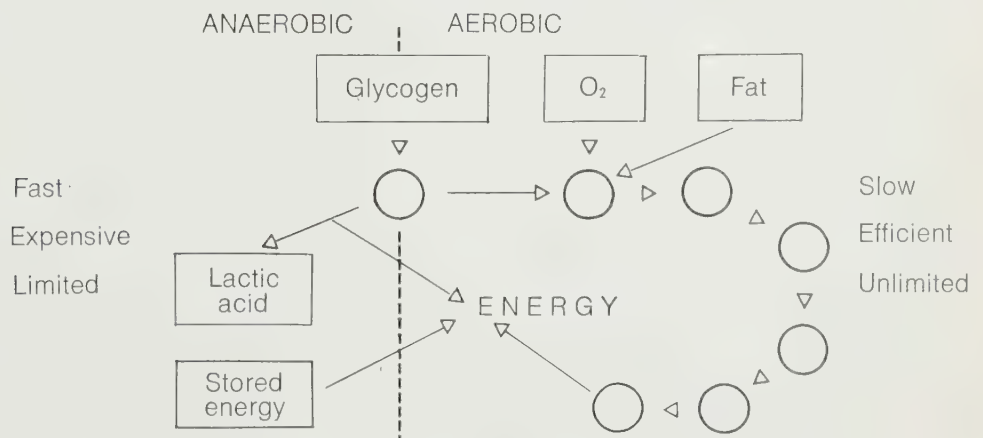


Figure 1. Metabolic processes during exercise

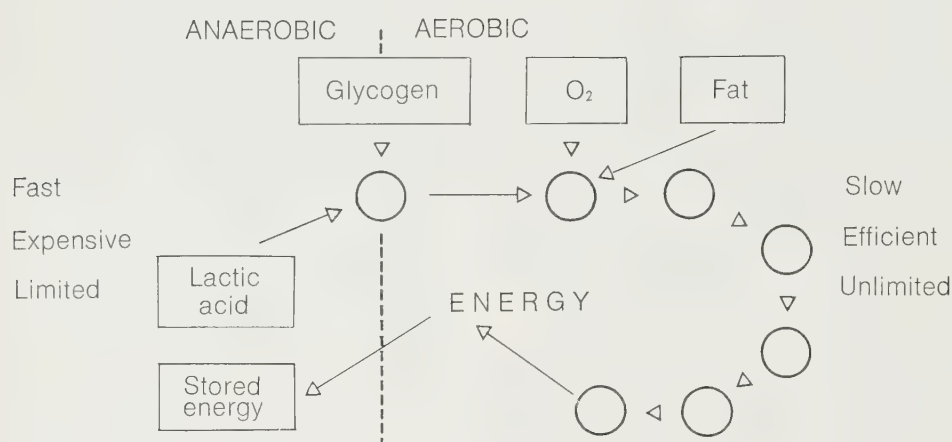


Figure 2. Metabolic processes during recovery from exercise

tive, as does the system for the utilization of oxygen at the cellular level. After 3-4 minutes of submaximal exercise, there are no further increases in heart rate, ventilation and oxygen consumed. At this point, the metabolism is relatively stable and energy is being produced at the same rate that it is being used.

Depending on the varying combinations of duration and intensity at any given moment, most activities require both anaerobic and aerobic sources of energy, with the possible exception of such extremes as high-intensity, short-duration anaerobic exercise (100 m. sprints, weight-lifting) and low-intensity, long-duration aerobic exercise (walking). For example, a soccer player performs aerobic exercise while running for 20-30 minutes, but anaerobic exercise when he occasionally sprints. During these high-intensity intervals (that is, greater than 50-60% of his maximal capacity), the energy required is greater than the slower aerobic mechanisms can provide and the athlete must draw on his anaerobic energy stores once more.

During the recovery from exercise (fig. 2) the local supply of stored energy must be re-stocked for later use. In addition, the lactic acid produced whenever glycogen was processed anaerobically has to be reconverted for eventual use in the aerobic assembly line. Since this requires energy and an extra amount of oxygen, it is referred to as the oxygen debt; this explains why the respiration and heart rate do not return to their nor-

mal resting levels immediately after exercise. Like all debts, it takes longer to repay than to borrow and one must pay a charge. In the case of lactic acid, the interest rate is about 24%.

The output of energy can be expressed in either absolute or relative terms. On an absolute basis, it is possible to measure the total amount of energy produced per unit of time. As in the comparison of the output of goods by a large and a small manufacturer, one has to consider the size of the plant. One method of expressing the energy requirements of various exercises is in Mets, or multiples of the resting metabolic rate. Although a larger man expends more energy in an absolute sense while walking or doing other types of exercises, he also expends proportionately more energy at rest. Thus, relative to their resting metabolic rates, people of varying sizes and weights expend 3 times as much energy (3 Mets) while walking at 3 mph. Table I is a list of average energy requirements of many occupational and leisure activities. It can be seen that the majority of occupational activities are less than 5-6 Mets since work loads higher than these are usually performed by machines. For most people, the only possibility to work at high levels of energy expenditure is to engage in fitness programmes or active sports.

Another useful approach is to express energy requirements relative to the maximal capacity of the individual. Generally speaking, the degree of strain (intensity) imposed depends on the energy required for an activity relative to the maximal level of energy that the individual is capable of providing aerobically; this is called the maximal aerobic or oxygen intake capacity and is considered the best indicator of a person's fitness. Thus, jogging at 5 mph (7-8 Mets) is more strenuous for the average, unconditioned middle-aged male whose maximal capacity is 8-11 Mets than for the athlete whose capacity may be as high as 20-24 Mets.

WHAT IS TRAINING?

In simplified terms, exercise is a form of stress and training is the adaptation of the body to the repeated stress of exercise. Training is also the product of the frequency, duration and intensity of exercise, that is, how often, how long and how hard a person exercises. Since the intensity of an exercise is relative to the maximal capacity of an individual, the same programme of exercise will have different effects on different people and on the same person over a long period of time as his own maximal capacity changes. It is important to point out that all three components are necessary for a good training programme. The housewife who runs up and down stairs many times per day is not doing enough exercise. Although the frequency and the intensity are high enough, the duration of 5-15 seconds is so short that she uses only the local emergency energy supply stored in the cells. Likewise, the man who feels that he is active because he plays golf once a week is not doing enough exercise. In his case, the duration is long enough but the frequency and intensity are so low that no adaptation is required. Thus, fitness can be improved only by those activities that stimulate the various systems of the body to adapt.

Assuming that a person has a safe, effective programme of conditioning, (that is, 2-4 times per week for 20-30 minutes each session at an intensity of 60-

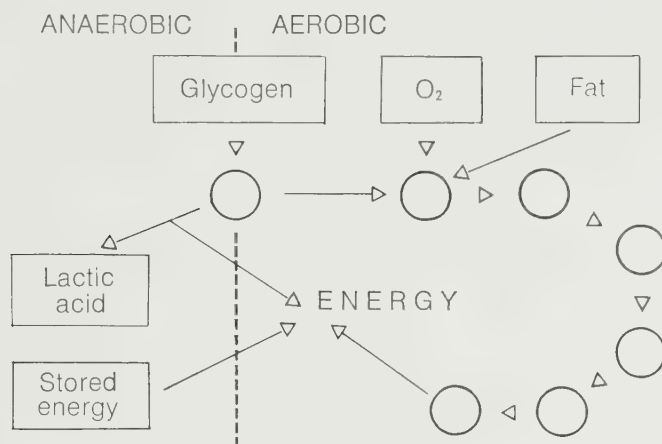


Figure 3. Changes in metabolic processes as a result of physical training

75% of his maximal capacity), what sort of changes can one expect? If the owner of a factory wanted to increase the amount of goods produced, he would attempt to increase the maximal capacity of the plant by adding more personnel, buildings, or equipment and/or by increasing the efficiency of the existing plant. Referring to Figure 3, it can be seen that the same sort of changes occur in the body. In terms of raw materials, it is not necessary to increase the amount of fat since there is usually more than enough available. On the other hand, one can increase the utilization of fat in the more efficient aerobic system. In addition, the amount of glycogen in the muscles is increased and is available for use, if necessary.

Of primary importance is the fact that the systems for the transport and utilization of oxygen are improved. That is, with endurance training the maximal aerobic capacity increases. Since the energy required to do a standard amount of work remains the same, this standard work load then becomes relatively less strenuous. This is also seen in the fact that the maximal heart rate is not affected by training, while the heart rate at a standard submaximal work load is reduced. As a result, a trained person is capable of doing more work before he reaches his maximal heart rate. In the same way, while performing a standard work load the amount of blood pumped by the heart during each contraction increases, the pressure against which the heart must work decreases, the amount of air

breathed per minute decreases and the efficiency of the oxygen transport system is improved.

There is also an improvement in the oxygen utilization system. With endurance training there is an increase in the number, size, and efficiency of the sites in the muscle cell that produce the energy needed for contractions. The fact that there is more oxygen available and that more of it is used means that more energy can be produced and more physical work can be performed. Also of importance is the fact, that while an untrained person begins to use the more expensive anaerobic system at intensities above 50% of his maximal capacity, the trained athlete can supply enough energy via the more efficient aerobic mechanism, until he reaches intensities of 70-75% of his maximal capacity. Thus, he not only works more efficiently, he delays borrowing the expensive anaerobic energy, and is able to recover sooner from higher exercise intensities because he has less lactic acid and his oxygen debt is less.

Once the body has adapted to a new level of energy production, it is easier to maintain this improved efficiency and maximal capacity. However, if the production is not maintained and is not occasionally demanded, then the body will adapt itself to the new diminished production levels. As in industry, it makes little sense to manufacture more of a product than normally required. As a result, there will be reductions in produc-

tivity, it may be necessary to dismiss some of the new personnel recently obtained, and some of the equipment will become "rusty" and inefficient through disuse. For these reasons, it is important to maintain the improved levels of performance through regular activity.

Unfortunately, even though a person is regularly active, there will be changes that occur due simply to the aging process. Some of these changes are due to the unavoidable, gradual reduction in the efficiency of the body's machinery with time, while others are caused by the living style of the person himself. For example, on the average there is a 10-15% increase in body fat from age 25 to 55 years. Since body weight is the result of the balance between the intake of potential energy and its utilization, people who gain weight are taking in more than they need. Research has shown that overweight people often eat no more and even less than persons of normal weight, but are less active. As a result, they unnecessarily increase their stockpile of raw material. This not only decreases the efficiency of the machinery, since some of the energy has to be used to carry the excess weight, but also tends to further decrease the amount of activity that the overweight person does voluntarily.

With advancing age, there is a tendency for people to decrease the number of hours that they spend in active leisure. There is also a tendency for older people to do less physical activity in their occupation because of seniority, promotion to jobs with more responsibility, etc. More important from the standpoint of conditioning is the fact that the average intensity of the most active 1-2 hours per week also decreases. The combination of all these factors results in a reduction in the maximal aerobic capacity and in the efficiency during standard work loads with increasing age. While regular activity will not retard the aging process (that is, the rate of decline in various body functions is the same in well-trained athletes as in sedentary people) the maximal capacity of the athlete is higher relative to the average person of the same age. Thus, even though the functional capacity of a well-trained 60 year-old

athlete is similar to that of a sedentary, 30 year-old man, the athlete is not "younger", but is able to do much more than other men of the same age.

In summary, with the proper combinations of frequency, duration and intensity of exercise, the body is stimulated to adapt to the repeated stress of exercise. The body becomes more efficient in the transport and use of raw materials needed to produce energy for the performance of physical work. Since the maximal capacity is also increased, any level of submaximal exercise becomes less stressful and the trained person will adapt to and recover from the same work load sooner than the sedentary person. Fitness may thus be defined as the *energy reserve*, that is, the difference between the maximal rate of energy production and the average daily energy requirements. If the maximum is high, a person will have sufficient energy to meet his daily requirements, better withstand unexpected emergencies, and have a surplus of energy available to enjoy his leisure time. At any age, the active person is better able to perform and enjoy activities during his leisure time. Although the quantity of life may not be significantly altered, the quality of life may be improved. Perhaps the burlesque queen, Mae West, said it best when she stated, "What is important to me is not the men in my life, but the life in my men".

TABLE I
AVERAGE METABOLIC COST OF ACTIVITIES

Mets	OCCUPATIONAL	LEISURE
1.5-2	Standing at ease; desk work; driving a car	Flying; motorcycling (pleasure); walking (1 mph)
2.5	Bartending; mechanical work on car; hunting (sitting), crane operating (sitting); typing	Mowing lawn (riding mower); power boating; shooting; shuffleboard; wood-working; washing car; fishing (from boat, bank or ice); walking (2 mph)
3.0	Janitorial work; light welding; housework (scrubbing, waxing); chopping wood (power saw); driving heavy truck or trailer rig	Billiards; bowling; canoeing (2.5 mph); horseshoe pitching; cycling (5 mph); golf (power cart); horseback riding (walk); walking (3 mph)
3.5	Stocking shelves; assembly line (with some lifting); wheelbarrow (200 lb load)	Iceboating; sailing (handling boat); archery
4.0	Painting; masonry; paper hanging; carrying trays, dishes, etc; gas station mechanical work (changing tires, wrecker work); farm work	Table tennis; mowing lawn (power-mower); golf (no cart); baseball, volleyball; softball; cycling (6.5 mph); canoeing (3 mph); waltzing; walking (3.5 mph)
5.0	Carpentry; handyman work; carrying 30-50 lbs	Gardening; lawn work; cross-country skiing on level (3 mph); cycling (8 mph); walking (4 mph)
6.0	Pneumatic tools; chopping wood (hand axe or saw); carrying 50-60 lbs; shovelling light earth (10/min, 9 lbs)	Cycling (9 mph); fishing (wading in stream); hiking (cross-country); hunting; water skiing; snowshoeing (2.5 mph); mowing lawn (pushmower); skating (9 mph); square dancing; dancing (rhumba); horseback riding (trot)
7.0	Carrying 60-70 lbs	Badminton; tobogganing; sledding; scuba diving; running or walking (5 mph); 5 BX (level 1A); cross-country skiing on level (4 mph); canoeing (4 mph)
8.0	Carrying 70-90 lbs; moving or pushing objects 75 lbs	Basketball (non-game); tennis; cycling (12 mph); swimming (breastroke 40 yds/min); touch football; ice hockey (non-game)
9.0	Shovelling (10/min, 14 lbs)	Cycling (13 mph); snow skiing; running (6 mph); horseback riding (gallop); 5 BX (level 2A)
10.0	-----	Running (7 mph); swimming (crawl 50 yds/min or backstroke 45 yds/min); mountain climbing; squash; fencing; gymnastics; cross-country skiing on level (5 mph); snowshoeing (3.5 mph)
12.0	Shovelling (10/min, 19 lbs)	Handball; hockey; soccer; basketball (competition); wrestling; 5 BX (level 3A-4A)
13.0	-----	Running (8 mph)
14.0	-----	5 BX (level 5A-6A)
15.0	Shovelling (10/min, 23 lbs)	Running (9 mph)

PSYCHO-SOCIAL IMPLICATIONS OF PHYSICAL ACTIVITY

Fred Heinzelmann

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This paper addresses physical activity in terms of the beneficial effects which exercise can have on individual attitudes and behavior, as well as the role of social and psychological factors in determining programme effectiveness. Special attention is given to relevant research and programme experience in this area and the implications of the findings that have been obtained.

A meaningful assessment of physical activity requires a review of the social-psychological effects of exercise along with its medical and physiological implications. It is very important to consider the affect that exercise can have on individual attitudes and behavior particularly as these relate to the person's work situation.

There are two key sets of issues that should be addressed in this context:

1. What are the kinds of benefits that exercise can generate in regard to an individual's feeling and attitudes and his actions and behavior?
2. What are the factors that influence participation in physical activity and thus determine whether social-psychological benefits will be realized?

Attention will be given to both of these questions with reference made to relevant research and programme experience in this area.

SOCIAL-PSYCHOLOGICAL EFFECTS OF EXERCISE

Persons who exercise may experience a number of beneficial social and psychological effects in regard to major areas of their lives. Investigators have reported that these effects include enhanced work attitudes and work performance; more positive feelings of sound health and well being; and better health habits and behavior.

For example, in one study, the social-psychological effects of an exercise programme were systematically examined among men aged 45-54, all of whom had physiological characteristics that increased their risk of coronary heart disease. In this study, the men were randomly assigned either to an exercise programme or a control group. The men in the control group were not involved in

the exercise programme but were given periodic medical examinations. The men assigned to physical activity programmes exercised 2-3 times a week for a period of 18 months. Each of the exercise sessions was supervised by physical educators, and lasted about one hour with calisthenics and group activities included.

This programme was carried out in a community setting with the exercise sessions held in local neighborhood schools. The men exercised before or after work and on weekends. (It should be emphasized that programme participants represented a wide range of occupations-including unskilled, skilled, and "white-collar" workers.)

After 18 months, comparisons were made of the changes reported by members of both the exercise group and the control group since the start of the project. In general, the study found that programme participants reported significantly more positive effects regarding their work, health, and behavior than did persons in the control groups.

Work Performance and Attitudes

The first major area of the men's lives that was examined for changes resulting from the programme dealt with their performance at work and attitudes toward work (figure 1.). Almost 60 percent of the 108 programme participants who provided information on this point indicated that they had noticed that the programme had a significant positive effect on their work performance. In contrast, only about 3 percent of the 80 men on the control group reported such improvement. Typical comments by the participants were: "I have a greater capacity to work harder both mentally and physically." "I have improved my power of decision and concentration."

Differences were also observed in the men's attitudes toward their work after completion of the programme. About 40 percent of the participants reported a more positive attitude, compared with only 1 percent of the men in the control group. Typical comments included: "I feel more energetic and more productive." "I enjoy my work more because I get more done." "My normal work routine seems less boring now."

Aspects of Personal Health

The second major area examined for changes included several aspects of personal health. In this area, too, the men reported meaningful differences as a result of the programme, such as increased stamina and energy, more positive feelings about their health, weight reduction, and greater ability to deal with stress and tension. In all of these aspects, the participants reported changes significantly more often than members of the control group (figure 2.).

Habits and Behavior

The final area examined for changes was that of habits and behavior. Once again, positive effects of the programme were reported more often by the 108 programme participants who provided information on this point than by the 80 members of the control group who responded (figure 3). For example, the two groups differed in the amount of food they reported they were eating, but not in the kinds of food. The majority of the participants who reported changes in this area indicated they were eating less and avoiding snacks between meals whenever possible. Only a few men reported that they were eating more at the end than before the programme began. In general, participants appeared to be more interested in, and more aware of, the importance of weight control than members of the control group.

Differences were also observed in the recreational patterns of the two groups. Participants again reported changes more often than members of the control group. In general, participants indicated that they had increased their recreational activities with family and friends. The majority stated that they now walked and cycled more than before. Many of the participants reported that they used stairs rather than elevators and often walked rather than rode when they had an option. It is clear that physical activity had influenced the life patterns of many of the participants; their behavior in a variety of settings reflected a more positive attitude toward physical activity in general. In short, physical activity had become a pervasive habit in the life style of many of these men.

Participants also reported a greater change in their patterns of sleep and rest than did members of the control group. They generally indicated a need for less sleep, as well as the ability to obtain a sounder and more relaxed kind of sleep. No differences were found between the men in the exercise and control groups in terms of changes reported in the kinds of food eaten or in smoking behavior. About one-third of the persons in both groups reported that they were now eating less fats and starches than before. About 20 percent of the persons in both groups reported that they smoked less.

These findings were replicated in a study of an exercise programme conducted in a Federal Agency in Washington, D.C. In this study, the physical activity programme was carried out in the person's work setting. The programme involved the use of an exercise facility which included a "circuit" of sequential activities such as tread-mill, bicycle, rowing, and rope jump. In addition, a jogging programme was available. The programme participants were expected to exercise for about 30 minutes three times a week. The exercise facility was open from 8:30 A.M. to 7:30 P.M. each work day and there was no scheduling of activity time. The participants in this programme were all "white-collar" workers.

After the programme had been in operation for one year, an assessment was made of programme effects on the participants' attitudes and behavior:

- In general, the most prevalent programme effects reported were those dealing with feelings of better health and increased stamina. Other effects reported in descending order of frequency concerned weight loss; decrease in amount of food consumed; more positive work attitude; less stress and tension; improved work performance; decrease in the amount of food consumed; more selective in the kind of food consumed; increased physical activity beyond the programme, expanded recreational activities; more adequate sleep and rest; and reduction in the amount smoked. (See Figure 4.)

- A very strong positive, and consistent relationship was found between programme adherence and reported programme effects. In each of the three areas—work, health, and behavior—(as well as within each area) effects were reported most often by persons whose adherence level was good and least often by persons whose adherence level was poor.

Specific Findings

Participants were asked about programme effects in regard to *work*—both in terms of their work performance and their attitude toward work. (Figure 5.). The relationship between reported effects and adherence was reflected in the participants' statements indicating that they could work harder both mentally and physically and/or that they enjoyed their work more and found their normal work routine less boring.

Changes or effects that were reported in relation to a person's *health* were also examined. (Figure 6.) These effects included increased positive feelings about one's health status; increase in the person's level of stamina and energy; weight reduction and a decrease in the level of stress and tension experienced. Typical comments here included statements to the effect that the person felt better and healthier, that he had more stamina and more energy, that his weight had been reduced or was better distributed, and that in general he found things were less stressful and/or that he could handle stress and tension more effectively and with less impact on his life.

Programme effects on *habits and behavior* were also noted. (Figure 7.) These effects were reported in regard to diet; increased physical activity beyond the programme; expanded recreational activities; more adequate sleep and rest; and change in smoking behavior. It should be emphasized here that very few participants indicated that they were eating more now or that they needed more sleep and rest than before.

In another study, it was found that exercise can also influence a person's self-concept and feelings of self-sufficiency

and emotional stability. Participants in an exercise programme may experience a feeling of accomplishment along with an enhanced sense of control over their lives.

The results of these studies indicate that exercise can influence how a person thinks and feels, both about himself and his work situation, which in turn can affect his actions and behavior. In short, there are a number of important areas that can be influenced by the level of physical activity and exercise a person engages in and how regularly he does exercise.

In this context, it should be noted that a number of American companies have established recreation programmes for their employees which include opportunities for physical activity and exercise. These programmes are viewed as beneficial to the employees in terms of improved physical and mental health, and are also seen as beneficial to management in terms of reduced turnover and absenteeism, as well as higher job efficiency and morale. Many companies such as North American Rockwell, 3 M, Kodak, Xerox, Mobil Oil and American Can have established programmes for their employees with the recognition that these programmes can be cost-beneficial even though it may be difficult to document systematically their effects on productivity, morale, and absenteeism. In general, American industry appears to have a positive-orientation in support of physical activity and exercise programmes with the recognition that such programmes are certainly prudent forms of company policy which can be advantageous to both employer and employee.

FACTORS INFLUENCING PARTICIPATION IN PHYSICAL ACTIVITY

In order to ensure that physical activity programmes are able to have a positive impact on individual attitudes and behavior, it is necessary to give attention to the factors that affect programme operations. It is particularly useful to examine the manner in which social and psychological factors influence the effectiveness of programmes in terms of how they

are organized and administered. This is important because programme operations can influence the decision which individuals make about programme participation, as well as their response to the programme over time.

While programme recruitment methods may vary, there is considerable evidence suggesting that an approach employing small group discussion and decision-making can be effective in influencing decisions to participate, as well as adherence patterns over time. In one study of an exercise programme for middle-aged men, a recruitment method involving small group discussions and decision-making was systematically compared with a large group lecture approach.

In general, the small group discussion-decision approach was more effective in influencing the decision to participate. It also had positive effects on programme adherence. The findings indicated that the effectiveness of the small group discussion and decision method was not limited by the personal and social characteristics of the audience, or by differences in the level of skill, or personal style of the group discussion leaders. In short, this approach was more effective than a lecture approach regardless of the social class and life-style characteristics of the audience.

The use of a small group discussion-decision approach is apparently effective for a number of social and psychological reasons. The active involvement of the participants in the group discussion is likely to increase understanding and learning, compared with the more passive reception of information obtained from a lecture. In addition, misunderstandings can be more readily detected and corrected at the time. The small group context also provides an individual with the opportunity to explore and evaluate the benefits and demands of programme participation. This establishes the basis for a more realistic form of commitment as soon as a decision has been made. Another critical variable is that individuals make their decisions concerning participation in a group context where their decision is reinforced by the decisions of others.

Other important programme components include those making it possible for participants to maintain regular contacts with medical and other programme personnel. The social-psychological value of this type of relationship cannot be overemphasized; it makes it possible to provide participants with the feedback, clarification, and support they need and want. Findings from several studies have documented the significant influence of this programme component on the level of satisfaction experienced by participants, as well as their adherence over time.

In promoting effective physical activity programmes, it is also useful to remember that factors influencing a person's decision to take part in an exercise programme may differ from factors influencing his adherence in the programme over time. The factors that lead to participation in an exercise programme may be concerned with health, desire for recreation, or a change in routine; while factors such as the organization and leadership of the programme, the game aspect, and the camaraderie or social support that is generated may be more instrumental in promoting adherence over time. Several studies have provided evidence highlighting the relevance of these factors.

In this context, reference should be made to Wanzel's study of the attitudes of employees of Canadian corporations concerning company sponsored physical activity facilities and programmes. In general, Wanzel found that Canadian "white-collar" employees are indeed interested in participating in some form of physical activity programme within their work setting. Their motivation is reflected in their willingness to monetarily support such programmes and facilities.

Since the social aspects can play a significant role in promoting programme adherence, efforts should be made to ensure that exercise programmes organized on a group basis are administered in a manner to support rather than impede social development. This is especially important since physical activity and exercise are often viewed as a form of social activity (i.e., persons often prefer to exercise with another person or with

a group rather than alone). As a basis for this preference, individuals cite a number of major benefits when physical activity is performed with others. They seem to enjoy exercise more, experience social support, feel a sense of personal commitment to continue, and welcome the opportunity to compare their progress and level of fitness with others. Therefore, organized exercise programmes should include opportunities for close interaction among the participants. Group activity should be made available for persons who are interested.

In order to promote effective physical activity and exercise programmes, the attention should focus not only on the potential participant, but also those to whom the individual relates most directly, and who are, therefore, likely to influence his attitudes and behavior. A man's wife, as well as his friends and colleagues, can play important roles in this sense. It may be useful and productive to direct attention to this broader social network rather than view the individual alone as the focal point in efforts made to influence his behavior. Often the attitude and reaction of those with whom an individual interacts determine whether or not he will participate, as well as influence his pattern of adherence over time. Those persons who serve as "significant others" should be adequately informed about the nature of the programme, and be involved in it on a regular basis in order to support the individual's participation, rather than influence it negatively.

This issue became evident in one study which examined the relationship between the wife's attitude toward the exercise programme and her husband's adherence in the 18 months' duration of the programme (figure 8).

The data indicated clearly that the husband's pattern of adherence in the exercise programme was directly related to his wife's attitude toward the programme. For example, 80 percent of those men whose spouses had a positive attitude toward the programme exhibited good or excellent adherence patterns, contrasted with 40 percent of the men whose spouses' attitudes were

neutral or negative. Conversely, only 20 percent of the men whose spouses had a positive attitude toward the programme exhibited a fair or poor adherence pattern compared to 60 percent of the men whose wives' attitude were neutral or negative. The husband's pattern of adherence was apparently influenced as much by the wife's neutral or indifferent attitude as by her negative attitude toward the programme. In this context, it is useful to indicate that programme social events including both participants and spouses help to create and maintain positive attitudes that support adherence.

In another study of an exercise programme conducted within a Federal agency, the supervisor's attitude toward the programme apparently influenced the adherence of employees. The data indicated that when supervisors supported the programme with a positive attitude, individuals were more likely to participate regularly.

In summary, issues that have implications for the organization and administration of exercise programmes are:

First, as stated previously, motivation to participate in programmes may include various reasons such as health, recreation, and change of routine. Therefore, in promoting participation, the focus should be diverse, and take into consideration a variety of motives whether or not they are health-related or consonant with the views of the persons organizing or administering the programme.

Second, the factors influencing a decision to participate may differ from those that influence adherence over time. Since the social aspects of physical activity encourage adherence, attention should be directed to this factor and efforts made to ensure that the programme is organized and administered to support, rather than impede, the development of social influences.

Third, in promoting exercise programmes, it is advantageous to view the target group as comprising the potential participant, as well as those providing a meaningful social network for him, i.e., his family, friends, and possibly work associates. The attitudes and reactions of the persons to whom potential parti-

cipants relate most directly, often determine whether or not they will take part and how well they adhere over time.

Summary

Social-psychological factors should be considered in relation to physical activity programmes, both because of the beneficial effects exercise can have on attitudes and behavior and because social-psychological factors may determine programme effectiveness. Exercise can influence how a person thinks and feels about himself and his job situation, which in turn can affect what he does and how he performs. Likewise, programme effectiveness can be influenced by the important role of social and interpersonal factors in promoting participation and adherence over time.

Systematic attention to these issues should serve to promote programme success.

APPENDIX

Figures addressing the social-psychological implications of physical activity.

Figure 1. Percent of exercise group and of control group reporting that the programme had beneficial effects on their work.

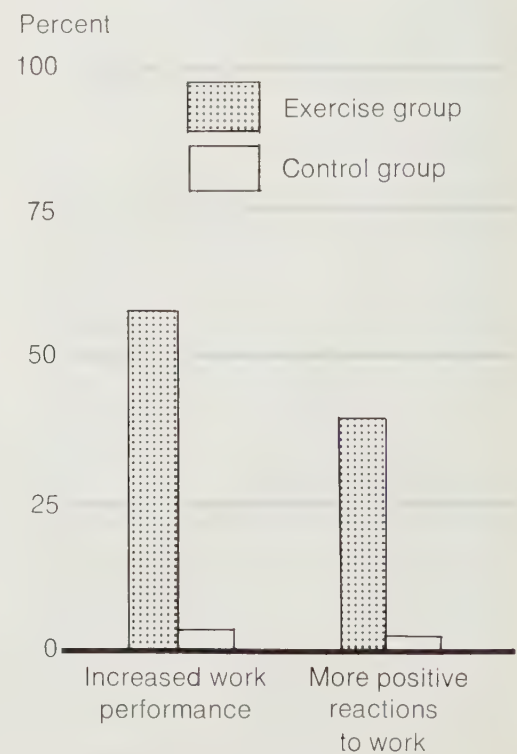


Figure 2. Percent of exercise group and of control group reporting that the programme had beneficial effects on their health.

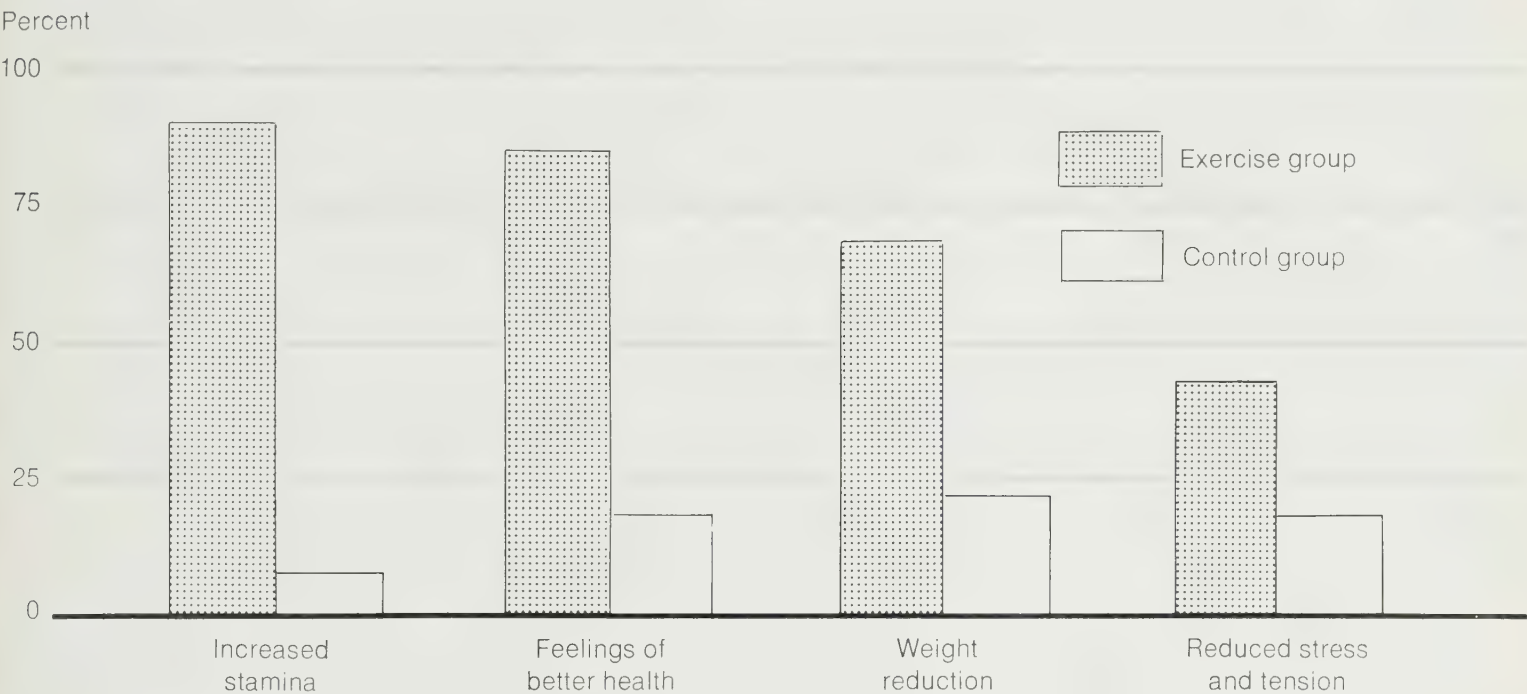
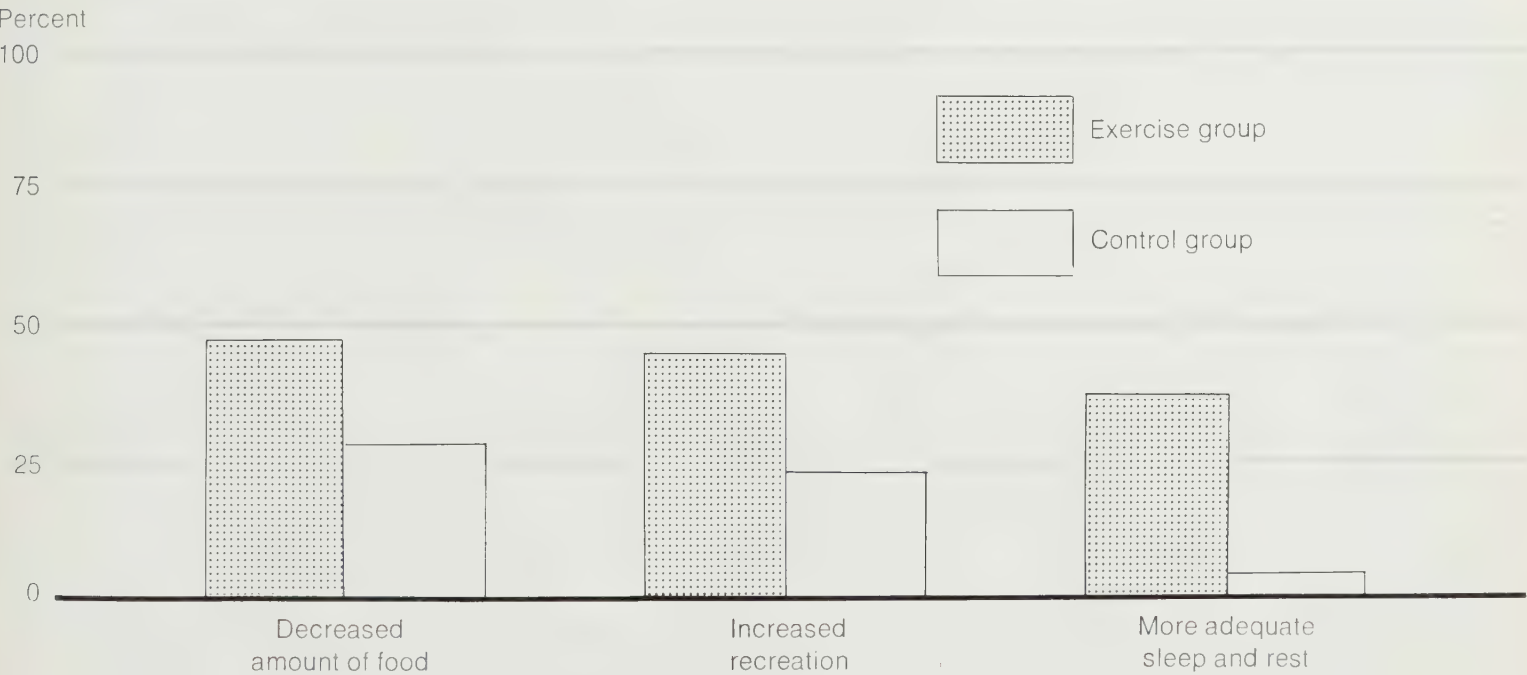
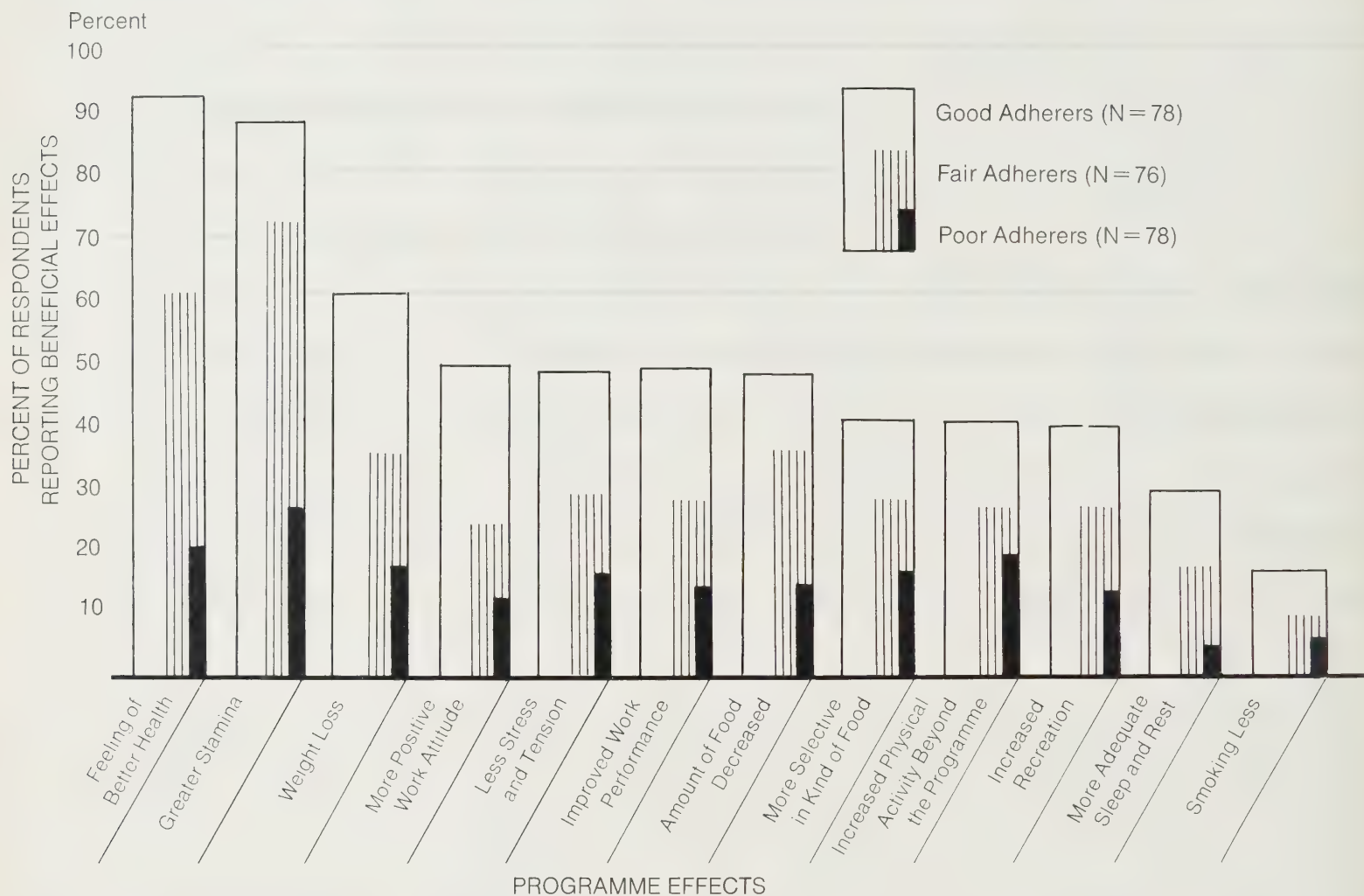


Figure 3. Percent of exercise group and of control group reporting that the programme had beneficial effects on their habits and behavior.



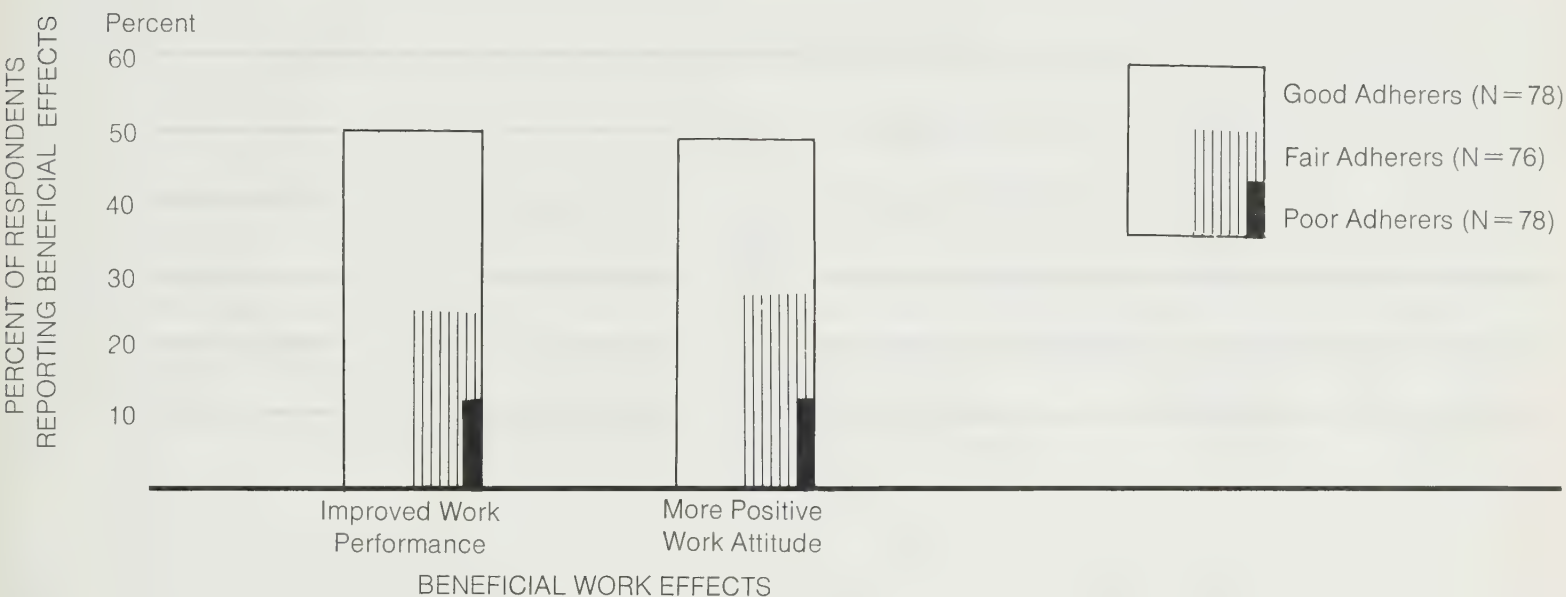
NASA HEALTH EVALUATION AND ENHANCEMENT PROGRAMME

Figure 4. Total Programme Effects (in relation to adherence)



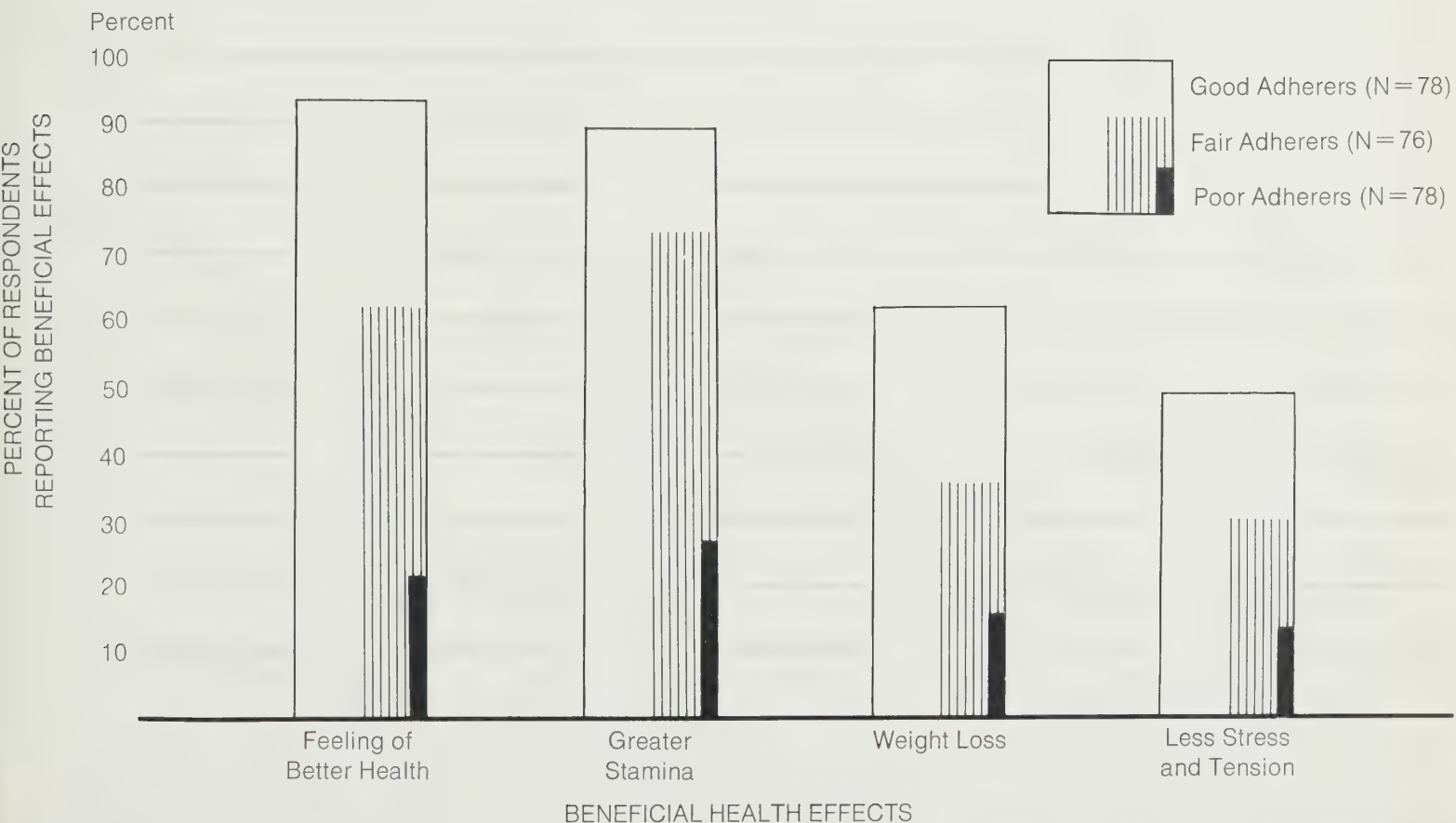
NASA HEALTH EVALUATION AND ENHANCEMENT PROGRAMME

Figure 5. Programme Effects On Work (In relation to adherence)



NASA HEALTH EVALUATION AND ENHANCEMENT PROGRAMME

Figure 6. Programme Effects On Health (In relation to adherence)



NASA HEALTH EVALUATION AND ENHANCEMENT PROGRAMME

Figure 7. Programme Effects on Habits and Behavior (In relation to adherence)

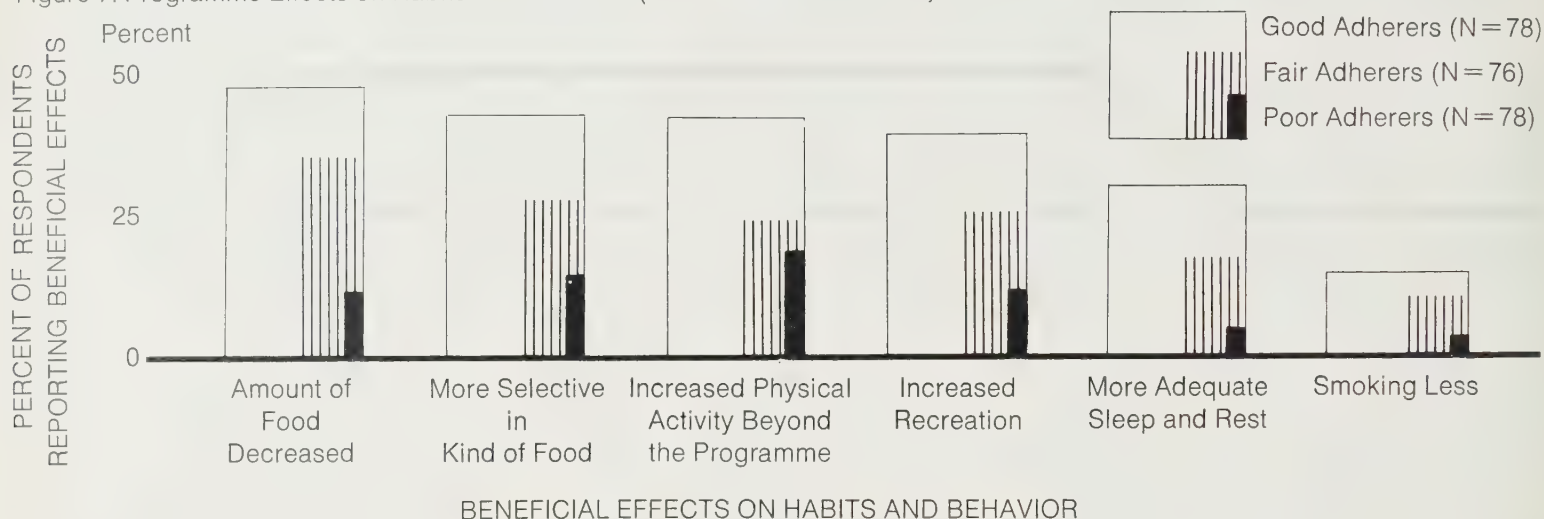
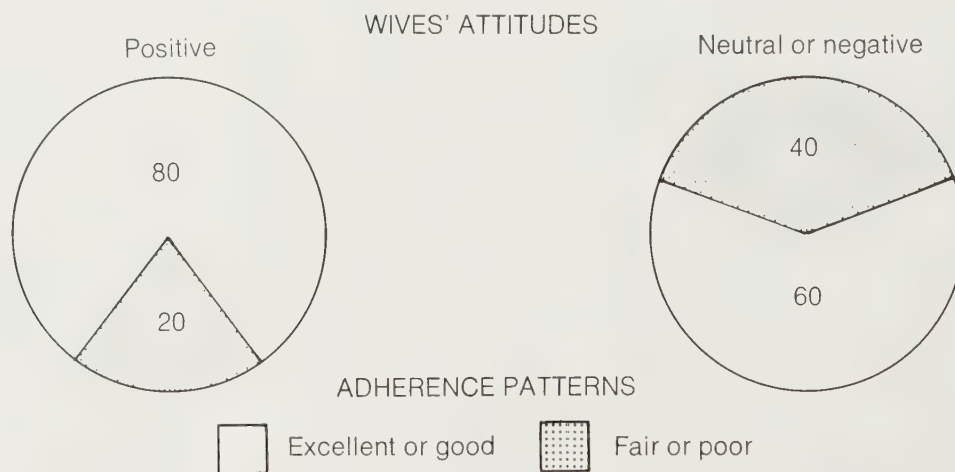


Figure 8. Wives' attitudes in relation to participants' adherence to the programme of physical activity, in percentages.



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**The Honourable Marc Lalonde's
Speech at the Banquet on December
2nd, at the Conference Centre**

My dear colleague from Nova Scotia,
Mesdames, Mesdemoiselles, Messieurs.

I know that you have been very busy today. Some of you started at 6.30 a.m. having blood tests and things like that, and then you have been exposed to quite a few speeches today; and it is certainly not my intention to add another one—or another extended one to the number that you have had today. I would like, first of all, to apologize for having been unable to greet you first thing this morning, but I understand that my colleague, Mr. Gillespie, did represent the government, and wished you well during your conference.

I would like, first of all, to congratulate all of you for such a massive turnout at this conference. There are approximately 250 of you, I believe, representing labour, industry and government from every area of the country. You have agreed to come together to discuss the question of the working environment or, if you prefer, the conditions under which Canadians are working or practicing their trade at the present time. This question is certainly of major importance, considering the fact that contemporary industrial and administrative activities are tending to become more and more sedentary.

I am particularly pleased to note not only a wide representation from business, labour and government, but also a large representation from the women in our society. I am very pleased to note this not only as Minister of Health which is obviously a significant element, but also as Minister responsible for the status of women in Canada. I think that your presence, ladies, and your participation in the debates is going to bring very significant contributions to the consideration of this particular problem of physical fitness in industry, in government, in business generally. The women are participating more and more actively in the work force, the participation rate is increasing almost every year, and it is significant that so many of you are par-

ticipating in the consideration of this particular subject. I said I didn't want to be very long, not only because you have had a number of speeches but also because I have been giving quite a few myself for the last few days. I am just fresh from a trip from warm and friendly Alberta, especially to Liberal Ministers. As a matter of fact, when I arrived in Edmonton with Judd Buchanan, (I was there with Judd Buchanan and Otto Lang) on a fund raising tour, (mind you we raised quite a lot of money, even more than we thought we would—I was telling Ernie Richardson from British Columbia Telephone, the story), we were told by the airport manager that, "there are two gentlemen waiting for you here", and we were sure that they were our drivers because somebody was going to come and pick us up, and suddenly we are faced with two guys about 5'8", clean cut, and there was Sargent so and so and Corporal so and so from the R.C.M.P. waiting for us. So, I asked them whether they had been sent to protect us from the Indians who were occupying the office of the Department of Indian Affairs in Calgary or from the oilmen, and mind you I have come back here tonight safe and free, but I have still not found out what they were there for. And, I must say that after all we have managed to reach a satisfactory arrangement with the Indians who were occupying the building, and we have not yet found a satisfactory arrangement with the oilmen, but we are working on it.

My very first activity as a Minister, two years ago, was to address the first national conference on Fitness and Health, which took place at the Chateau Laurier at the time. I know that several of you did participate in that conference and it was the first time that we were trying to get, from across the country, people involved or interested and concerned with physical fitness in various fields of activity; to get them together to sit down and talk and discuss matters, and it was probably from that conference that the question of physical fitness was brought into focus and discussed so consistently in relationship with health. Really, that conference meant the beginning of a great deal of activity throughout the

country with regards to this basic question of health and physical fitness. There have been several provincial and regional conferences on the subject, and it has brought to all of us who are concerned on the policy side and on the political side with matters having to do with health generally, the importance of the individual lifestyle and the importance of the individual's environment with regards to health. It is subsequent to that conference that I decided, for instance, to transfer from the Welfare side of my department to the Health side of my department Sport and Recreation Canada, so as to indeed stress that fundamental element in our health policy and also in our sport and recreation policy because the two are very closely tied in our opinion. You may have noticed a few months ago, last April, I published, on behalf of the government, a working document entitled, "New Perspective on the Health of Canadians". In that document we were stressing that if we have a marginal dollar to invest, assuming that you don't have unlimited dollars and businessmen here will know what I mean—if you have marginal dollars to invest in the field of health, you should not put it in bricks and mortar, but you should put it more in influencing the changes in lifestyle, changes in the environment and improvement in human biology generally. This is, therefore, what you have been gathered here for, a very important priority in the work of the government and in the work of my department, and I would submit the presence of my colleague from Nova Scotia here is a testimony to this,—a very high priority also amongst my provincial colleagues when we are discussing health policy generally. Fundamentally, we are stressing a very old thing, that it is better to prevent than cure, and we have been told that for many years except that maybe we had not put all our energies and efforts into trying to develop this in terms of particular specific programmes for governmental action and actions by the various agents in our society. So, this conference that we are holding today and tomorrow represents the implementation of one of the resolutions that was adopted

at the conference two years ago, and once more I want to express my sincere thanks to all of you from all areas. I was told, for instance, that out of fifty corporations we invited to participate here, forty-six of them accepted and joined and are here. I think this is a very impressive record and I want to thank you for it and I want to thank also all those members from the labour side, from the labour unions who have agreed also to participate in those discussions. We have a lot of things going. You have been tested, yourselves, this morning, and I understand that not only have you been tested for your blood counts, but you have been tested for your physical stamina under the direction of Mall Peepre, from my department, and I am told that, although the music was quite good, the leader was a pretty remarkable person. There are still a number of you who need to carry on that type of physical exercise fairly regularly. Mall Peepre is working in my department, she receives a good salary and we need her, so any company here who is looking for somebody to carry on a programme, like this, in their own plant, are welcome to it but not to her.

Another thing that you have also seen today are some activities in this city in the field of physical fitness, and tomorrow you will have an opportunity to test or try the self-administered physical fitness test that has been developed over the last couple of years, and that we are trying to put into operation over the next few months. As a matter of fact, we hope to have a Canadian home fitness test which will be ready for general distribution in Canada, by next Spring. You have also seen today and heard from some of the people who have spoken to you about some of the activities done by the various federal departments. A lot of those activities that some of our departments are doing now have resulted, interestingly enough, from employee initiatives, and it has been our public servants who have on their own pressed the government and pressed their senior officials to provide them with space and facilities, and they have on their own developed the programmes that were

required in this respect. My own department, the Fitness and Amateur Sports' Branch are providing the necessary consultants for programme development and leadership training. We are discussing, with Treasury Board, the development of a general policy for all departments. That policy is now ready and in its concept, and we are going to see whether we can have the resources available to pursue it further, and implement it more and more effectively.

Your conference is to continue tomorrow and on the succeeding days. Today, I believe that you mostly listened to speakers. Tomorrow, we will be asking you to participate in a much more personal way, as the activities planned will take the form of some twenty workshops, in which each and everyone of you is invited to participate, to contribute and formulate your own suggestions and your ideas concerning the subject of this conference. I would like to emphasize the great importance we attach to what will take place tomorrow and I would also like you to know that we do not want just a list of resolutions calling for more federal support. We already have hundreds of such resolutions accumulating here and there. Rather than that, I would prefer that your efforts mainly focus on what you can accomplish within your own surroundings, with your own resources, and devoting some of your own time if need be. The idea, I believe, is not to present hasty resolutions on physical conditioning tomorrow morning, so as to be able to celebrate the advent of physical conditioning in Canada in three weeks or even one year's time. It is a question of evolution, and time is needed for these changes to take place. But I think it is important to set some goals, though it will take time, even if resources are not immediately available.

We are facing, in this country, increasing health costs, regularly increasing health costs, and there is a danger that these health costs will become excessive for our economy. You are facing increasing unrest, and this applies as well to labour union leaders as well as to managers and entrepreneurs, you are facing

growing worker dissatisfaction and alienation. We are facing absenteeism and unproductivity in many areas, and the whole question of physical well-being in its broadest sense may be an area where we can make some steps in alleviating some of those problems in reducing their impact.

I have said, a few minutes ago, that I did not expect, and we should not expect that you will have in two days resolutions that will allow you, for the next six months, to transform the work environment and the physical conditioning of your employees. But, one thing sure is that we should try and develop over the next day or two a certain number of basic trends, a certain number of basic policies which we will implement over a period of time, and with the resources that will be available. Don't pass resolutions, if I might ask you, or suggest asking the federal government to dump hundreds of millions of dollars in that area at the present time. We don't have that kind of money available. And on the other hand, we are not asking you to take hundreds of millions of dollars of your own money and put it in that area at the present time because we know you don't have it either. But, what we can do together is, as I said, with the resources available, whatever they are, we can sit together and spread, phase in, those reforms, those improvements that we find would be appropriate in our fields of activity and in our fields of endeavour. I think the time is ripe for this type of effort in our society. There has been a general increase in awareness with regard to fitness and participation, and I would like here to pay special tribute to those of you who have been working with Sport Participation Canada. I think that organization has made a tremendous impact on Canadians generally and I would like to stress that although my department has been providing the seed money, the core money for that organization, that organization now is getting

several times from the private sector, by direct contributions from broadcasters, press organizations, private entrepreneurs, direct contributions which are several times that of my own department in that area. I think this is a good example of what government and the private sector can do together when there is a general concern and interest without spending millions and millions of cash dollars in a particular area. I think our society has never been as ready as today to begin to reverse the trend towards inactivity, and to initiate attractive and innovative programmes which directly benefit the participants obviously; but will also benefit the Canadian business sector and the Canadian industry and ultimately the entire Canadian society. Once more, today has been a day of orientation and introduction, tomorrow we are really putting you to work and I am looking forward to the proposals, suggestions, resolutions, call them what you want, that will emerge from those discussions that will take place.

I would like to express my thanks, not only to participants in this conference, but also to the national and international experts who agreed to participate in it and to speak to you today. Their contribution (which was brought to my attention at the end of the day) will have a decisive influence on the progress of the discussions and the results of this conference.

In conclusion, I only want to wish you the very best, to thank you once more for having agreed to participate in this conference and to assure you that my department and myself and my government, the Government of Canada, will follow your conclusions with great interest. We will study them and, on the other hand, we hope that you, yourselves, will take the initiatives that you will find appropriate and adequate with regard to the general theme of this conference. This is a first, I think, in terms of this particular concentration on business and industry and labour. I don't know whether it is the last. It will be very much dependent on you, I suppose, but I suspect



it will not be the last. And, as I say, if the next two days are as encouraging as this first day has been, I think we will all be very happy that the conference took place and certainly as far as I am concerned I will certainly be very happy to bring whatever support and contribution we can to your efforts.

Thank you very much and best of luck.

THE ROLE OF THE HEALTH PROFESSIONAL IN EMPLOYEE FITNESS PROGRAMMES (DIRECT and SUPPORTIVE)

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This presentation is made to the National Conference on Employee Physical Fitness by a health professional who has incorporated the views of many associates, friends, and contacts. The resultant viewpoint that I plan to express however, will not be universally acceptable to all of these persons and others, nor does it necessarily reflect in all aspects the views of my employer or the sponsors of this Conference. In some aspects it challenges other precepts, opinions and policies, yet it is not intended to be deliberately controversial. Rather, it is intended to be pragmatic, based on fact, reason, and practicalities. It should be noted that it does represent an evolution of personal viewpoint.

The originally proposed title for this presentation was "medical clearance". My immediate reaction was, "why a medical clearance procedure?" Even to me that had the taint of a barrier—read or imagined—being imposed arbitrarily, or for valid reason, but which had the potential to thwart individual participation in exercise. Some would counter with the comment that such medical clearance could be an effective motivational tool, which remains to be demonstrated however.

Is not the overall objective to get people more physically active and hopefully more physically fit? Previously in this Conference you reviewed the evidence in favour of such an objective. My approach will be, therefore: how do health professionals facilitate, not thwart or make difficult, this endeavour to promote physical fitness?

We have witnessed internationally an evolution on two fronts:

1. Increasing endorsement by the medical profession, based on accumulating scientific and medical data, in support of the long-term efforts of physical educators and recreationalists to promote physical activity for health benefits.

2. A recognition by the public that physical fitness is not a simple panacea to good health, but along with nutrition form significant components of preventive medicine that probably comprise two of the keystones to health promotion in our industrialized yet sedentary societies.

WHY "MEDICAL CLEARANCE"?

The high prevalence of coronary heart or coronary artery disease in developed nations has gained scientific and public attention. Most middle-aged persons in such nations probably have some atherosclerosis of the coronary arteries although for many it may never become significant to produce complaints, disability or death. The incidence of "heart attacks" appears to increase with age, and appears to be increasingly frequent for men in their late twenty's and thirty's. Deaths from "heart attacks" seldom make the headlines unless the victim was well known, or regardless of one's notoriety, it so appeared that the victim was jogging or otherwise exerting himself at the time of his untimely demise. In this latter instance a public information imbalance tends to occur. The dangers of exercise, particularly for those of us who are middle-aged, sedentary, possibly overweight and under considerable stress, . . . these dangers of exercise receive undue emphasis and attention, and begin to appear forboding. Even the medical profession, which by and large sees a skewed population,—that is, with a complaint or after the fact (ill or recuperating from illness)—, harbour similar concerns about the dangers of physical activity. Let me state this. I believe that the evidence is meager, if not outright inadequate, to substantiate such an attitude for the general adult population at the present time. Indeed there is a small segment of the population "at risk". As I have heard Dr. Ken Cooper of "Aerobics" fame say, we tend only to hear of the popularized dangers of exercise in the public media, and so little of the benefits derived by those who exercise regularly. Health benefits lack sensationalism and are not headline material! With all due respect, a glimmer of change is occurring in the Canadian media in recent years.

It is welcomed. Incidentally, the only significant results relating death to exercise have resulted from laboratories conducting treadmill and bicycle ergometer testing. An overall mortality rate of one in 10,000 tests has been reported⁽¹⁾. Most of these groups contain a higher proportion of coronary or coronary-prone patients than would a random sample of the general population, and therefore must be considered in this light.

Dr. Samuel Fox III, of the Washington Medical Centre, and co-authors Drs. Naughton and Haskell, in 1971 stated that the scientific and medical evidence to date indicates that it appears "prudent" to encourage people to seek regular physical activity⁽²⁾. I would like to add—let's stimulate poorly conditioned people to undertake physical activity in a "prudent manner", with discretion regarding gradation and regularity.

OCCUPATIONAL HEALTH VERSUS EMPLOYEE PHYSICAL FITNESS PROGRAMMES

Doubtless it is clear that there is a difference between an occupational health programme and an employee physical fitness programme. In Canada, the United States, and several other countries occupational health is gaining increasing interest, importance, regulation and funding. Still, on a wide-scale applied basis it is a distant second to occupational (or industrial) safety.

Employee physical fitness in the terms used by this Conference (not "job suitability" criteria) has gained accelerated emphasis since:

1. A sedentary lifestyle may be imposed by the work circumstances.
2. The apparent association of physical inactivity with coronary heart disease.
3. The opportunity exists to improve the work atmosphere, personal health, and possibly job performance by encouraging the attainment of satisfactory levels of employee physical fitness.

The points to be made are: an employer physical fitness programme is not an occupational health programme, is not a substitute for an occupational health programme, nor need it be part of an occupational health programme. On the

other hand, an employee fitness programme may enhance the overall effectiveness of an occupational health programme, or an occupational safety programme. In numerous businesses it would be possible to have an employee physical fitness programme without a declared and formal occupational health or safety programme in operation. Such might be the case particularly for sedentary office workers and small business establishments.

CONCERNS ABOUT CURRENT APPROACHES

A variety of approaches might be used for health professional involvement in employee physical fitness programmes. After extensively reviewing available medical and scientific literature as it pertains to such programmes, it can be summarized thusly:

1. There is a dearth of published information (most report on pilot programmes or small research endeavours). It should be noted that there are several non-scientific articles in business and lay publications, and a few monographs on such programmes (as distinguished from amateur sports and recreation programmes).
2. Most North American programmes thus reported involve a medical clearance or medical screening procedure. These take the form of either an in-house process, particularly if it has a significant research aspect; or approval by one's personal physician (with whom the employee physical fitness programme organizers and the business seldom directly relate). If exercise stress testing is performed, it is almost always conducted in medically approved settings.
3. Most authors speak of evaluating programme effectiveness, but indicate the difficulty in doing so. Is measurement of programme effectiveness necessary, and should it include one or more of these measurements:

- a. interest and participation rates?
- b. physiological effects on participants?
- c. job performance?
- d. health effects (short and long-term)?
- e. social value?

These questions have been asked frequently.

4. Programmes with a heavy research component, repetitive laboratory exercise testing, and/or significant medical involvement would tend to be expensive and therefore in the short-term for most businesses would probably be somewhat difficult to justify on a cost-benefit basis.

You have heard at this Conference, and will continue to hear about, a variety of imaginative approaches to employee physical fitness programmes. With these concerns in mind, and the need for flexibility to encourage the development of these programmes, the following is proposed for the role of health professionals.

ROLES OF HEALTH PROFESSIONALS

Health professionals can participate in two major ways:

1. SUPPORTIVE—By being verbally supportive and enhancing credibility of employee physical fitness programmes; by rendering assistance in planning, developing and promoting the programme; by being educators and promoters of this and related health issues; and by assisting in the monitoring of programme effectiveness.
2. DIRECT—By involvement with individual participants in devising and implementing programme entry procedures (screening; medical clearance if required), exercise testing (if part of programme), and counselling; by handling the preventive and treatment measures and minor problems secondary to exercise; and by being available for consultation and emergency procedures for special exercise programmes such as post-coronary heart disease exercise regimens.

Dr. William Haskell made a significant statement I would like to quote. "For the long-term, large scale success of an employee fitness programme, medical approval is a necessity and active medical participation is highly desirable. Ideally, any physical fitness programme should be an integral part of the total employee health and medical programme"⁽³⁾.

Since physical fitness programmes are interested in health promotion, even more so than employee sports and recreation programmes, it is important that the health or medical department director and personnel are supportive of such an undertaking. Naturally, this is possible only in those organizations with a full or part-time occupational health service, be it administered by a physician or registered nurse. As stated previously, an occupational health programme is *not* a prerequisite to instituting an employee fitness programme; nor is outside consultative medical advice necessarily required although it is perhaps desirable in some circumstances.

SPECTRUM OF APPROACHES TO PROGRAMME ENTRY (so-called "clearance")

Several methods (or if one prefers "types of clearances") can be utilized by health professionals or other personnel prior to an individual participating in a physical fitness programme. These form a spectrum from the simple and inexpensive to the elaborate and costly. The method chosen is up to the employer, employee representatives, and if available, the medical or health representatives.

Prior to presenting this spectrum, three terms must be clarified:

1. *Clearance*—(medical or otherwise) *prior to exercise*, which are the procedures desired (and in some cases necessary) prior to embarking on an exercise programme.

2. *Exercise (stress) testing or fitness appraisal*, one optional step in the clearance procedure that can be performed for any number of reasons (examples: exercise performance measurement and tailoring of fitness programme; clinical or diagnostic reasons; possible motivational effect). The value of such sophisticated tests, particularly for unselected groups, is being questioned by several of us.

3. *Health evaluation or inventory*, or those procedures added to the foregoing which at best only remotely relate to exercise (examples: vision testing, certain blood analyses). Frequently those who promote clearance and evaluation prior to exercise tend to go beyond those procedures strictly pertinent to exercise.

Offered for your consideration are the following programme entry or "clearance" procedures.

1. NO PROCEDURE—Naturally enough, one has to start somewhere! Many poorly conditioned or sedentary adults can safely enter fitness programmes without any screening or medical clearance procedure. In fact, popular do-it-yourself programmes such as 5BX and 10BX, Aerobics and Aerobics for Women have been undertaken by tens of thousands of people. Many doubtless have launched such programmes injudiciously, yet there is no apparent epidemic of unfortunate events save for minor aches and discomforts. Employee physical fitness programme sponsors and organizers may find it neither feasible nor desirable to impose a screening or clearance procedure. One certainly has to question the value of such procedures for the relatively active, relatively young, and largely female employee groups.

2. SCREENING QUESTIONNAIRE (or equivalent). Somewhere between no entry procedure and true medical clearance must lie a simple but creditable approach. One such method, based on the concept of a medically sound questionnaire, was proposed in British Columbia by the Multidisciplinary Advisory Board on Exercise

(M.A.B.E.) and studied by the British Columbia Department of Health this year⁽⁴⁾. Upon registration at this Conference you completed the current version of the Physical Activity Readiness Questionnaire called "PAR-Q" (or "are you up to PAR?"), which incidentally is still undergoing validation. Over 5000 adults have completed this questionnaire, 1250 of whom were extensively studied by medical and physiological evaluation including responses to exercise testing (bicycle ergometer). The intent of "PAR-Q" is to identify those individuals in the population at high risk from involvement in unsupervised exercise programmes, which is believed to be a small percent of the adult population.

Two applications are proposed for "PAR-Q":

- a. CONTROLLED (Administered) APPLICATIONS
- b. PUBLIC (self-determined) APPLICATIONS

In either situation "PAR-Q" is designed for self-administration. Controlled application means it is reviewed by a health professional (company, non-company or personal) or other authorized person. Judgment is rendered as to suitability for exercise without additional evaluation. Those identified as being potentially "at risk" are advised or required, depending on circumstances, to have a medical evaluation (which may or may not include an exercise test) prior to undertaking significant physical exertion.

The public application of "PAR-Q", that is, self-administered *and* self-interpreted by the individual as to his or her suitability for unsupervised exercise, is still undergoing validation. Hopefully, it will be suitable for this large-scale use as part of promotional efforts to get Canadians more physically active and fit.

3. "EXERCISE-SPECIFIC HEALTH EVALUATION"—Limited or system-specific medical or health professional screening for physical activity is an accepted method, if properly performed, for clearing or approving people for participation in fitness programmes and amateur sports. Frequently this includes a brief history, limited physical examination, and more frequently nowadays, a resting electrocardiogram (ECG). This can be conducted through a company occupational health service or by personal physician. Exercise testing is gaining increased popularity, is frequently added on to medical clearance procedures, and is being conducted in both medical and non-medical situations. In those programmes where it is being used it is generally offered to all participants once medically cleared. Guidelines are currently under development in Canada and the United States regarding exercise testing, since there is a marked increase in commercial, non-profit, and licensed health professional offerings of these services.

It should be noted that sophisticated or monitored (relatively costly) exercise testing is not required for most people entering a fitness programme. It is merely a useful tool when applied properly. More simple field tests, such as Cooper's 12 minute or 1.5 mile walk/jog/run, or Recreation Canada's "Canadian Home Fitness Test" currently under development by Drs. Bailey and Shephard, may be more appropriate adjuncts to entry into fitness programmes. The Canadian Home Fitness Test is readily applicable to employee fitness programmes on an individual or mass test, low cost basis, and appears suitable for giving estimates of current endurance fitness as a potentially useful motivational tool.

4. HEALTH ASSESSMENT—More extensive one-time or periodic health evaluations are frequently utilized, generally for selected groups in certain businesses and governmental agencies. An employee fitness programme should not be used as an excuse to do more than the "exercise-specific" medical evaluation. Rather, such costly evaluations require policy decisions of a different order, and is mentioned here only to identify the difference.

SPECIAL PROGRAMME ROLES FOR HEALTH PROFESSIONALS

As you are well aware, rehabilitation and remedial programmes are utilized by compensation boards, employer and employee groups, and community health care organizations. Employee physical fitness facilities and programmes can expand their range of opportunities to develop programmes for the handicapped employees, coronary and other cardiac disease employees, remedial candidates (such as post-injury and post-illness return to work). It is beyond the scope of this presentation to consider details of health professional involvement in these areas.

CONCLUSION

Several approaches can be utilized for health professional involvement in employee physical fitness programmes. A spectrum of entry procedures were considered, the choice of which is based on needs and limitations in different situations, as well as mutual agreement by employer, employees, and health professionals. Simple methods of entry into such programmes can be utilized, and indeed complement the rapidly emerging field of "exercise management or leadership" whose fitness programme techniques have the poorly conditioned adults foremost in mind. The overall objective must remain paramount: for health reasons people must become and remain regularly physically active, and hopefully physically fit.

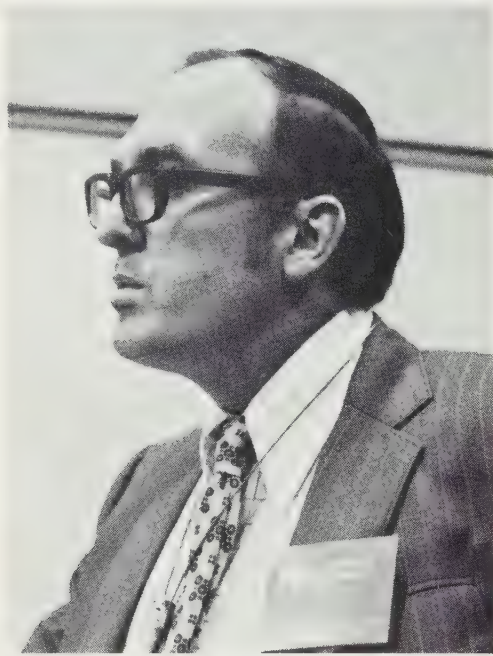
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THE LEGAL IMPLICATIONS OF INSTITUTING EMPLOYEE PHYSICAL FITNESS PROGRAMMES

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Born in Halifax, Nova Scotia; B.S., LL.B. Dalhousie University; 1960 Admitted to the Alberta Bar; 1960 to 1967 Employed by Shell Canada; 1967 to 1974 Joined Federal Government; Director of Legal Services, Department of Energy, Mines and Resources; since May 1974 Director of Legal Services, Department of National Health and Welfare.



INTRODUCTION

Mr. Chairman, Ladies and Gentlemen.

When I was asked to consider presenting a paper to a plenary session of this Conference, I took one look at my waistline and my immediate reaction was to nominate the thinnest lawyer on my staff, but my wife encouraged me to come to this Conference and present the "before" programme look.

It was under these circumstances that I accepted the invitation to come and spend a few minutes with you. My paper is entitled "The Legal Implications of Instituting Employee Physical Fitness Programmes". Yesterday you were apprised of the medical, physiological and psychosocial implications of physical activity. I assure you that the few minutes that I will spend with you will not replace the necessity of further consultations with, your legal counsel, your insurance representative or officials of your local Compensation Board.

It is perhaps appropriate just before the nutritional break that I give you, as an appetizer, some legal food for thought respecting the considerations you should take into account before adopting or accepting a physical fitness programme. I assume the employers or supervisory staff are to be included in such a programme notwithstanding the title of this Conference. I might suggest that perhaps desk people like myself require such a programme at least as much as any category.

LEGAL STATUS

As a prelude to dealing with factual situations that might occur in the establishment of a physical fitness programme, I would like to discuss with you the two basic legal positions in which a person may find himself if he is injured while participating in such a programme. These two positions and how they are determined, together with the legal incidents that flow therefrom, are the crux of this paper.

It appears to me that the question to be answered is whether or not the injury *arose out of and in the course of his employment*. If the injury did in fact arise

out of and in the course of such a person's employment, then such injury and compensation therefore would be covered under the applicable Workmen's Compensation Statute. If the injury did not arise out of and in the course of that employee's employment, the Workmen's Compensation Statute would not apply.

There may well be, where persons are injured under these circumstances, a question as to whether or not certain insurance policies cover this situation. I don't intend to elaborate on this area but it is something you should consider in your future deliberations on this subject.

If the injury did not arise out of and in the course of his employment, the injured person's rights would rest solely upon whether or not there was a contractual or tortious liability incurred by a third party. The third party could be the employer, his servants or agents.

WORKMEN'S COMPENSATION STATUTES

I have referred earlier to the phrase "arising out of and in the course of employment" with respect to the determination of the legal position or status of a person injured while participating in a physical fitness programme. This phrase is found in the Workmen's Compensation Statutes of nine provinces and in the Ordinances of the Yukon Territory and the Northwest Territories. This identical phrase is also included in the Government Employees' Compensation Act. In Quebec, the phrase appears in a slightly modified form in that it reads "arising out of *or* in the course of the work in any employment".

As probably many of you are aware, the compensation to which a workman is entitled under a compensation statute takes the place of his right of action, and he may not sue his employer in court for damages for an injury received in the course of his employment. Where the liabilities of third parties are involved, the workman may elect to take action against such parties or to claim compensation from the Board.

In the event of the workman's election to take compensation, the Board is subrogated to the rights of the workman or his dependants.

While the statutes may vary from province to province in some particulars, the main principles are the same; all the provincial legislation has been modelled on the Ontario statute.

The *Government Employees Compensation Act* provides for payment of compensation, etc. to employees of the Government of Canada. The general principle of this law is, that compensation benefits payable to an employee of the Crown are to be the same as those provided for employees employed in private industry, under the workman's compensation law of the province in which the employee is usually employed.

THIRD PARTY LIABILITY

Assuming for the moment (and I will delve into the legal niceties of this point later on in this paper) that a person is injured during a physical fitness programme or as a result thereof when such injury did not arise out of and in the course of his employment. In such a situation, what are his rights to recover for the injury suffered? If his injury is due to his own negligence or there is no negligence (act of God, inevitable accident), he would have no right to Workmen's Compensation and he would have no rights against a third party. His only entitlements would be derived from the utilization of accumulated sick leave with pay, the utilization of his medicare benefits and existing government or private hospitalization plans. In addition, he may have his own disability insurance coverage or may be covered under a group plan. Under such circumstances, it is essential that such insurance is not restricted to injuries arising out of employment. I have not had the opportunity to study the nature of group or individual insurance coverage, but it is a point for you to consider in any future deliberations respecting the institution or acceptability of a physical fitness programme.

If a person's injury under these circumstances was due to the negligence of an employer, his servants or agents, such injury as might have been caused by inadequate or faulty equipment or accommodation, then that person should have a right of recovery against such employer, his servants or agents for the damages that resulted from the injury.

Perhaps at this point I should mention the settled legal conditions upon which a person may recover in tort or negligence actions. Before a person can be found negligent in any circumstances, there must be established the existence of

- (1) a duty of care owed by the defendant to the plaintiff;
- (2) breach of that duty by the defendant which legally causes harm to the plaintiff;
- (3) consequent damage to the plaintiff.

There was within our legal system a distinction respecting the degree of care that a person owed to another person, where in one case the person owing the duty received some consideration or benefit either directly or indirectly from the person to whom the duty was owed. This categorization of degree of care was classified into the following three categories:

- (1) the degree of care owed to a licensee;
- (2) the degree of care owed to an invitee;
- (3) the degree of care owed to a trespasser.

It is the writer's understanding that under our present legal system there no longer exists such a distinction between (1) and (2). The only recognized distinctions that remain in our system are that of the degree of care owed by a rescuer to the person being rescued, and the degree of care owed to a trespasser by the owner of the property being trespassed.

In other words, to put the position in context, the situation is that if an employer voluntarily and without any obligation of any kind permits persons without reward to use recreation space and facilities as opposed to either charging for such space and facilities, or being under any obligation to do so, the standard of care required towards the persons using same is now under the law the same standard. That standard

is the test of what would be expected of a reasonable man under the circumstances.

The test of a reasonable man in negligence actions was furnished in the 1850's by Baron Alderson in *Blyth v. Birmingham Water Works case (1856) 11 Ex. 781* at p. 784 where he said:

"Negligence is the omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do."

THE DETERMINATION OF LEGAL STATUS

A few minutes ago I pointed out that the crux of this paper can be reduced to the legal position of a party when he suffers an injury while participating in a physical exercise programme. I also mentioned that the determination of that position was included in that question. I have attempted to elaborate on the two possible legal positions but until now I have purposely avoided discussing the basis upon which that position is determined.

Before I discuss the leading Canadian case respecting a determination of the legal position of an injured employee, perhaps you will permit me to mention an English case and an Australian case in chronological order of their appearance in legal jurisprudence. The first case was dealt with by the House of Lords and is cited as *St. Helen's Colliery Co. Ltd. v. Hewitson [1924] A.C. 59*. This case involved a question as to whether the accident in question arose out of the worker's employment. In that case the Judge summed up the status of the law at that time as follows:

"The employment may be for some defined manual work, say, hewing coal, but the accident need not arise when the man is actually using his pick. He may be going down in the cage. He may be resting between shifts, he may be taking a meal. He may be merely standing by waiting for the next job. All these and such as these, are not "the employment" but are incidental to the employment. The man is

in the course of his employment, is engaged in his employment in all such cases. They also serve who only stand and wait."

COMMENT

One might say that employees also serve who only exercise.

The second case is an Australian case, *Davidson v. Mould* (1944) 69 C.L.R. 96. In that case Chief Justice Latham, at p. 105, summed up the law as follows:

"I think that if a worker is using part of his employer's premises for his own purposes during a rest period, it is immaterial, in this connection, whether he is doing so by the mere permission of his employer or in the exercise of a legal right conferred by the contract of employment . . . If the terms of the contract of employment provide that the worker, during the course of this working day, may cease work for one or more short periods for the purposes of resting or refreshing himself . . . it is to say the least of it, possible to regard him as being in the course of his employment."

These cases illustrate the principle that in order to be acting in the course of employment one does not necessarily at the particular point in time an injury is suffered have to be performing a specific function for his employer. He may be lighting a cigarette, taking a coffee break, taking an elevator up to his place of work or looking out a window. In these situations and while on the employer's premises and within normal working hours, courts have found that any such injury did in fact arise out of and in the course of the employee's employment and therefore Workmen's Compensation would apply.

LEADING CANADIAN CASE

I think it appropriate at this time to spend the balance of this period taking a look at the leading Canadian decision in this area. The leading case is the *Workmen's Compensation Board v CPR and Noell* (1952) 2 S.C.R. 359. This is a Supreme Court of Canada decision and therefore, unless distinguished on the facts, is

binding upon all Canadian courts and has strong persuasive influence on administrative tribunals.

The employee in question in this case was a summer employee engaged as a waitress in the CPR Hotel at St. Andrew's, New Brunswick. In that capacity she was to perform such work as the company might appoint. She received meals on the company's premises and she was entitled to sleeping accommodation that was assigned to her. She was not to be off duty without the permission of the head of the Department. She was restricted to certain places on the grounds of the Hotel. She was given oral permission to use a jetty and three floats for swimming, as well as the golf course and tennis court, subject to guest privileges. The use of the swimming privileges were free. In June of 1949, while off duty, she proceeded to a swimming place about ½ mile from the Hotel following completion of her duties at the conclusion of breakfast. She dove off the jetty into two or three feet of muddy water. She struck bottom and suffered serious injuries. The prime question put before the court was whether the accident to Miss Noell arose out of and in the course of her employment under the Workmen's Compensation Act of New Brunswick.

The court found that under the circumstances, the accident did not arise out of and in the course of her employment. Mr. Justice Rand, in his Decision, mentioned the difficulty with the interpretation of this phrase. He said it was particularly hard to interpret in respect of activities which are not related directly to the work. He indicated the difficulty in making a decision when an employee is on the employer's premises and is not at the moment actually furthering the employer's work or interest. Mr. Justice Rand mentions cases where a workman straightens himself up for a momentary rest, eats his lunch at his workbench, where a domestic servant could be conceived to be on duty while on the premises notwithstanding that she is not actually doing work. He found that Miss Noell was not actually performing her duties as a waitress nor entering upon or departing from her place of work. He felt that the privilege of swimming and the

utilization of that privilege by Miss Noell was not an incident of her work. He felt that in order to bring Miss Noell under the Workmen's Compensation Statute, she must have been either carrying out a duty under the coercion of her contract of employment or in an exercise of conduct that is intimately involved as an incident of employment. On balance, he felt that the act of diving off the jetty was not an incident of work but severed from it.

This case has been distinguished in a number of subsequent decisions and I believe some of the Workmen's Compensation Boards, particularly in British Columbia, are reluctant to follow it.

To place this case in context of this Conference, let's assume for the moment that an employer provides facilities and equipment on his premises for the purpose of employees engaging in physical exercises during the noon hour break. The use of such facilities and equipment by employees is purely on a voluntary basis. Would Workmen's Compensation apply in the light of the Noell case? I think it would be very difficult to predict a court's decision on this matter, but I am inclined to the view that the court would well find that an injury suffered by such an employee did not arise out of and in the course of his employment. If the situation was slightly changed, that is if an employee was exercising on an optional basis during coffee breaks, a period for which he would be paid, then I think the decision would be in favour of compensation. The line of distinction is a fine one. I suppose if you wished to ensure that compensation were to apply, you would insist that the exercises take place on the employer's premises and within a time period for which the employee is being paid. If you did not wish compensation to apply, one would remove the exercises off the employer's premises and definitely ensure that the exercises did not take place within normal working hours.

SUMMARY

In summary I wish again to remind you that the main question to be answered respecting physical fitness programmes is, what is the legal position of an employee if he is injured during such exercises or as a result thereof? Or, to put it another way, is the injury subject to Workmen's Compensation or is it not?

I suggest that the factors to be considered by you, the courts and administrative tribunals in making this decision are the following:

- (a) whether the injury occurred on the premises of the employer;
- (b) whether it occurred in the process of doing something for the benefit of the employer;
- (c) whether it occurred in the course of action taken in response to instructions from the employer;
- (d) whether it occurred in the course of using equipment or materials supplied by the employer;
- (e) whether it occurred in the course of receiving payment or other consideration from the employer;
- (f) whether the risk to which the employee was exposed was the same as the risk to which he is exposed in the normal course of production;

I have purposely not alluded to the legal contractual implications in employer-employee labour contracts but I am sure there are some to be considered in the light of the situation I have outlined.

Thank you for your attention and I hope I have been of some assistance to you in your deliberations. I also wish to thank the Conference organizers for the invitation which they have extended to me.

APPENDIX

CANADIAN WORKMEN'S COMPENSATION ACTS

1. The Workmen's Compensation Act, R.S.A. 1970; c. B97;
2. The Workmen's Compensation Act, R.S.B.C. 1960; c. 413;
3. The Workmen's Compensation Act, R.S.M. 1970; c. W-200;
4. The Workmen's Compensation Act, R.S.O. 1970, c. 505;
5. The Workmen's Compensation Act, R.S.N.B. 1952, c. 255;
6. The Workmen's Compensation Act, S. Nfld. 1962, No. 32;
7. The Workmen's Compensation Act, R.S.N.S. 1967, c. 343;
8. The Workmen's Compensation Act, R.S.S. 1965, c. 283;
9. The Workmen's Compensation Act, R.S.P.E.I. 1951; c. 178;
10. Workmen's Compensation Ordinance, Y.T.O. 1973 (3rd Session), Bill 35;
11. Workmen's Compensation Ordinances; N.W.T.O. 1967 (1st Session), c. 22;
12. The Workmen's Compensation Act, R.S.Q. 1964, c. 159.

REFERENCE MATERIAL

Canadian Negligence Law by Allen M. Linden

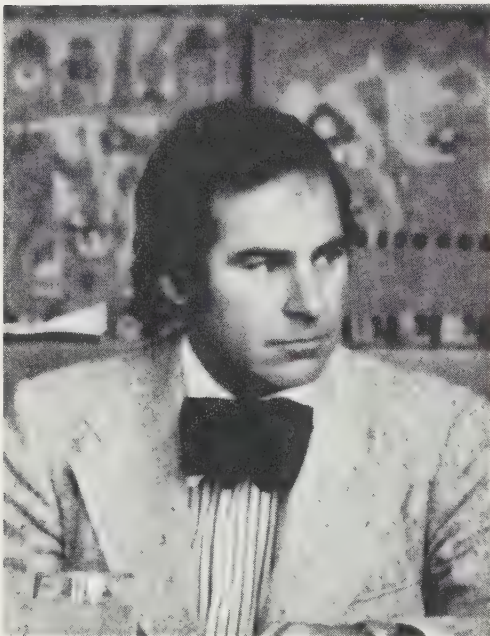
CCH Labour Reporter

The Canadian Abridgment, 2nd Edition, Vol. 38

EMPLOYEE PHYSICAL FITNESS FACILITIES

G. E. Beml

M.R.A.I.C. University of Manitoba; joined Defence Construction Limited; 1952, Associate partner with Greenspoon, Freedlander and Dunne, Ottawa, subsequently forming own firm in 1957; buildings recently completed by this firm include: the Y.M.-Y.W.C.A., the Ottawa Public Library, several commercial buildings; projects currently being worked on: Chateau Health Centre, National Archives Building.



My task is to talk about physical fitness. I will try to illustrate the very simplest facilities, such as package showers in a basement space, on through to the more elaborate facilities such as complete buildings.

I would like to talk about roof and basement spaces which may be utilized to accommodate various programmes. I thought I would start off with the Chateau Laurier Hotel, specifically the air rights over the parking garage at the rear of the building. We suggested to private clients that we should install a health centre in this space. Included in the facilities were squash courts, swimming pool, health facilities as well as a clinic for preventive medicine.

The proposed Chateau Health Centre, located in the built-up area illustrates that physical fitness facilities do not necessarily have to be "in-house" but should be nearby for easy access by users. A further example might be the school across the street from a plant being rented from the local School Board.

The next illustration is the St. Columban's Parochial Hall in Cornwall which has an auditorium-gymnasium, bowling alley and the usual facilities such as crafts and games rooms. We omitted to include any stress testing facilities. The proximity of cars to a building is important. I believe cars should be parked in a more remote location not only for aesthetic reasons but to encourage some walking from the parking lot to the building.

In the case of a Fire Hall-Tourist Bureau for the Corporation of the City of Ottawa, it was suggested that the trees in the existing gulley be removed and the gulley filled to facilitate the exiting of fire engines. By replanning the site we retained the mature trees. We not only saved money but provided a picnic area for the adjacent Tourist Bureau.

St. Mary's College, Brockville, was an addition to an existing school. The project included residence, auditorium and a separate gymnasium. Schools now are encouraging more individual sport activities, such as tennis, canoeing and jogging. On this very large tract of land, I believe we lost the opportunity to incorporate exercise trails, orienteering, and

jogging facilities. Exercise trails can be provided with stations for various physical activities such as, knee touching, chin-ups. These trails could be used during the winter season for cross country skiing. A few lights would allow the trails to be used after dark.

Illustrated on the map of Ottawa are a number of bicycle paths and trails which have been developed by the National Capital Commission. Employees jogging to work or users of bicycles would require shower facilities at their place of work in order to freshen up before starting the day's activities. The minimum facilities would be a standard package shower, probably located in an unused basement space.

An example of basement space being well utilized is the New York Life Building in New York. They have converted the fifth basement storage area into a jogging track, provided a package shower and shelving for the user's personal equipment.

The first size of facility would be a very small room probably 20' x 20' to facilitate "circuit training". An illustration of this would be Western Telephone of New York where bikes and treadmills are used as the basic equipment. This limited space requires more organized activities such as an appointment schedule and individual programmes. They have provided minimum lockers, built-in showers and provide gym suits for their top executives to work out in.

The next example is the Exxon Corporation which illustrates the ultimate in specialized equipment, including electronic counters and timers. The "circuit training" starts with the medicine ball being thrown against the backstop which automatically counts and times the action. The top executives of Exxon work out in a prescribed pattern on individual basis, being observed by the attendants in charge of the facilities. Mirrors were used extensively throughout the premises. The skipping and treadmill for jogging were completely programmed on a highly individual basis. Small individual lockers for personal items and running shoes were provided, all clothing being provided and laundered on a daily basis.

The next room probably required in the sequence would be a fitness testing room. This could be a very small space, probably 10' x 15' perhaps with a bicycle, treadmill and testing equipment. This is probably one of the most important facilities, particularly from the point of view of motivation. A stress testing facility could stimulate employees into physical fitness activity.

An example of basement space being used is the Brooke Claxton Building occupied by the Department of Health and Welfare at Tunney's Pasture, Ottawa. The former storage space approximately 50' x 50' has been converted to a "fitness training" room for exercise and jogging. Various types of motivations have been utilized such as the clock numerals being replaced by the letters spelling out "think fitness". A few package showers and changing area have been located nearby. I understand this was done for about \$5,000.00 for the building and \$5,000.00 for equipment.

The next size of facility would be a space of about 50' x 100' which would more readily receive a jogging track. An example of this is the basement space under the cafeteria at Confederation Heights, Ottawa. This facility would require carpeting on the floors, painting of existing walls and providing light and good ventilation. I understand that the installation was completed for about \$60,000.00.

The Edeka Company facilities in Hamburg are an excellent example of good utilization of small space. A two storey height has been provided for badminton and volleyball while the side spaces on the lower and mezzanine levels have been well utilized with wall bars, bikes, treadmills and exercise equipment. Minimum sized lockers are provided and the utilization of a unique shower system. The multi-nozzled shower is adjacent to a large tub similar to a whirlpool in which employees may relax.

An example of a complete physical fitness and recreation facility for employees would be the training centre for the Xerox Corporation in Leesburg, Virginia. The teaching-housing building caps out the hillside and architecturally

is very good. An aerial view would show the adjacent gymnasium facility including tennis courts, swimming pools and trails. The fitness-recreation building appears to have been designed to augment the main building in the country setting and the form of the building is reminiscent of grain silos.

This preconceived concept seems to have had an adverse effect on the interior of the building. "Form follows function", should be utilized in the design of all buildings. The beautiful glu-lam structure, I believe, should have been expressed on the outside of the building so that the users would not have the hazard of running into the columns. A similar criticism might be found for the floor mounted enclosed air conditioning units, another hazard has been incorporated with floor mounted supports for the basketball backstops. The glu-lam structure terminating in the middle of the main gymnasium does not free the space for all of the activities that could be carried out in such an installation. I believe that the users did not have sufficient input during the planning stage.

The Y.M.-Y.W.C.A. Building on Argyle Street, Ottawa was designed a few years ago. It was the first combined Y.M.-Y.W.C.A. in Canada. The residential tower is occupied on the lower floor by married couples, the men's residence in the middle portion of the building and the women on the upper eight floors.

Because of the male and female floor separation the elevator controls allowed the equipment to be either used separately or keyed for common service. The stairs became fire exits and did not encourage walking between various levels.

The first illustration shows the entrance foyer and lounge where all of the building activities were to be immediately displayed. The space was to come alive with illustrations not only of physical activities but varied programmes within the "Y" Certain portions of the nearby cafeteria were to flow into this space.

Control in buildings is important. One person stationed in the lobby of the Y.M.-Y.W.C.A. can operate not only the hotel function but supervise the entire flow pattern. This control desk overlooks the elevator lobby, main stair to the multi-purpose area on the second level, stair entrances from the basement parking garage, the nearby cafeteria and the corridor leading to the rear of the building into the physical department.

The double gymnasium has glazed concrete block on the wall, wood floors with equipment inserts, basketball backstops suspended from the ceiling in both directions. The gymnasium can be divided in half with a simple net curtain across the midpoint.

The gallery is rarely used and is questionable in terms of usage of space. Most people prefer to participate in the various activities.

The health club area and the locker system used at the "Y" is a small individual locker for personal use and the large full locker while you are using the facilities. The gymnasium has been placed on an upper level. It was decided that the swimming pool should be on the same level as the lockers in order to avoid wet stairs. This also allowed horizontal flow and control through the showers through to the swimming pool area. There are the usual facilities such as, massage area, steam room, exercise area, weight lifting room.

In the swimming pool, windows were incorporated to give a more pleasant environment. There was considerable debate whether these windows would interfere with the teaching programme. When the pool is divided into small sections, light refraction is not a problem. The lifeguard station should be located between the windows and the pool in order to provide proper supervision.

The gallery has been converted to stress testing rooms and offices.

Next is the Ottawa Public Library, on Metcalfe and Laurier and represents an issue of how handicapped people should be considered in the use of buildings. The wheelchair users should have full access to all facilities. There is some debate whether they have to utilize the main routes of access. Consideration

should be given to the handicapped in the programmes, in terms of rehabilitation of employees such as a man who has a broken leg. He should have access to the facilities to allow a more speedy recovery.

Consider the coffee break, it may be that the facilities should be somewhat remote from the place of work to encourage some walking as a form of physical and psychological relief.

I had hoped to illustrate the method of installing a running track on the roof of buildings. The Cambridge Club of the Four Seasons Hotel has a very good example of this type of installation. We had proposed one for the Y.M.-Y.W.C.A. building. It was decided not to place a track in the gymnasium as it interfered with too many of the various games such as basketball and badminton.

I had also hoped to illustrate the Toronto City Hall, one of the finest buildings in Canada, constructed by the people of Toronto with a great deal of courage and foresight.

The Finnish architect, Ravell, who won the World Competition for the building, died of a heart attack during the construction and did not see his greatest building completed. Perhaps less stress in his lifestyle might have allowed him to see his greatest achievement completed.

As an architect in private practice, I would like to suggest that this National Conference on Employee Fitness gives us the opportunity to improve the life style of the Canadian people. I recommend that we do not miss this opportunity.

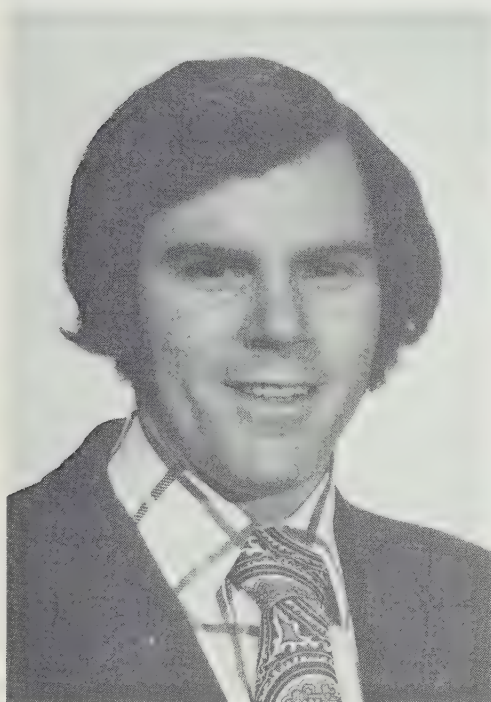
Editor's Note:

Slides accompanied this presentation.

PROGRAMME AND ADMINISTRATION

W. Brent Arnold

B.Sc., M.Sc. in Recreation Management, University of Oregon; postgraduate and research work in exercise testing and training for the prevention and treatment of coronary heart disease; Certified Industrial Recreation Administrator; Board of Directors of National Jogging Association; presently; Manager, Physical Fitness and Recreation, Xerox Corporation, Virginia.



Good morning ladies and gentlemen. It is a pleasure to be here in Ottawa to speak at the National Conference on Employee Physical Fitness. Today, I will speak on the aspects of programme and administration as it relates to industrial physical fitness.

ULTIMATE GOAL

In Canadian industry, the ultimate goal is to provide optimum physical and mental fitness for all employees. This task of providing fitness must start with each one of you attending this conference. The knowledge learned here must be taken back to your respective corporations or businesses. Through proper programme and administrative development, this goal can be achieved for all.

PHYSICAL FITNESS CONCEPT

The first concept is what I call an *idea*. Some one person or group of people in the corporation must come up with the idea of physical fitness. The idea could start with interested people in the personnel or planning departments or maybe could evolve from labourers, manufacturers or researchers; or maybe secretaries, middle or upper management or executives.

Now that the idea of a physical fitness programme has evolved, it must be *sold* on its own merits. The following concepts should be addressed when selling a physical fitness programme:

- (a) Risk factors involving health and medicine.
- (b) Physical fitness statistics showing preventive medicine and fitness is good for people.
- (c) Research describing how corporations benefit from physical fitness. It is already known how physical fitness benefits the employees. This research should include examples of studies showing that from having physical fitness within corporations that there will be:
 1. An increase in morale and in productivity;
 2. Less absenteeism and employee turnover.

- (d) Dollar value placed on an executive or management person of a corporation versus the cost of replacing either after he or she dies from a heart attack. For example, let us talk about an executive that makes \$100,000.00 per year and comes from a corporation that provides its people with good medical, retirement, insurance, profit sharing and other benefits. If this person dies from a heart attack, the corporation will not only lose the wealth of knowledge that they have instilled in him, but they will lose somewhere between \$500,000 dollars to approximately one million dollars. This money not only includes salary and the above benefits, but also includes finances for bringing in another executive. If he or she is from outside the company, relocation benefits would also be included.

PERSONNEL AND SUPERVISION

The planning of any programme should include personnel and supervision. It must be determined *what* people are going to be served throughout the physical fitness programme. Are they going to be executives only, or is management going to be included? Will the programme be for males or females or co-recreational? What about children and families? These are all decisions that have to be made.

In regard to the administration, there are several questions. Who is going to make the selection of the physical fitness specialist? Or exercise physiologist? Under whose department will this person fall? The medical, personnel or employee benefits department? Or will it be the research or marketing department? Is the fitness person to be hired, trained or untrained? Will a degree be required? If so, is the degree going to be required in physical fitness, recreation, exercise physiology or health? Will the person be male or female?

PROGRAMME STRUCTURE

Several concepts should be given consideration under programme structure. Included are costs and fees, activities, equipment and facility layout and hours of operation.

COSTS AND FEES

Is the corporation going to subsidize the fitness programme or is it going to be free to the employees? If the employee is going to pay a fee, what will it be? In Rochester, New York, Xerox employees enrolled in the employee fitness programme pay seven dollars per quarter which covers registration and towel fees. The Xerox Executive Fitness Programme participants, also in Rochester, are charged \$150.00 per year which includes a personalized programme as well as a cardiovascular exercise test. It must be remembered that the best financed facility does not mean the programme will be good. It depends wholly on the professionals running the programme.

ACTIVITIES

Are the fitness activities going to be supervised or unsupervised by fitness staff? Will the fitness programmes be organized or will they be unorganized? Some corporations just provide the fitness room with equipment and no supervision where others provide the room and equipment with a very personalized programme for all participants.

EQUIPMENT AND FACILITY LAYOUT

The fitness specialist should be consulted prior to the planning of the facility to get his or her expertise in design, equipment and functional use of the facility.

HOURS OF OPERATION

The hours of operation of a fitness programme should be of primary consideration and will depend on the fitness staff as well as company work hours. It must be decided whether the fitness facility should be open before, during or after work. Also, noon hours, weekends and holidays must be considered. In the Xerox employee fitness programme in Webster, New York, employees may workout either at noon or after work depending upon their work schedules. In the Executive Fitness Programme, participants workout at a time during the workday convenient to both the executive

and fitness specialists. However, students at the Xerox International Center for Training and Management Development in Leesburg, Virginia, workout at noon, evenings and weekends.

PROGRAMME CONTINUUM

It is important to note that a fitness programme can be very unorganized and can begin with the simplest fitness concepts. It does not necessarily have to start at work. To begin with, a person has to be educated and motivated on fitness. One of the first ways that one becomes educated about fitness is by reading periodicals, newspapers and/or textbooks. The availability of brochures put out by insurance corporations and medical groups also educate people as does the media (television and radio). The President's Council on Physical Fitness and Sports puts on a thirty second spot announcement over television. Other programmes, such as Sixty Minutes, may show programmes on exercise and heart disease.

Once an individual grasps the concept of fitness, he or she will find that they do not have to go out and buy the best equipment or join the most elaborate facility. One can start at home by using a spare room where he or she can run-in-place, pedal a bicycle ergometer or walk up and down the stairs for fitness. People will find that they can walk or jog around the neighborhood or even bicycle as well as jump rope. While still in the neighborhood, one can locate the neighborhood fitness facilities. Included might be the Catholic Youth Organization, Jewish Community Center, YMCA, YWCA or even the local Park and Recreation Center. On one's way to work, he or she may wish to ice skate if near a canal or even walk briskly, jog or bicycle. On the lunch hour, one can ride a bicycle or jog. If stairs are available one can climb them for fitness or go outside and walk around the building.

Even the simplest space could be converted to a fitness facility and showers could be installed as well as a circuit trainer and treadmill. A fitness area such as the one I just described was implemented at our Xerox facility in Dallas, Texas.

The more advanced programmes are becoming co-educational with group involvement in aerobic exercises and jogging. After the jogging, an isotonic weight workout on a circuit trainer is done for muscle tone and flexibility. The bicycle ergometer is also used. In the metropolitan areas the large corporations are incorporating personalized fitness programmes which are a one-on-one relationship—examples include: Mobil Oil in New York City, Preventive Medical Center in Palo Alto, California and the Fitness Institute in Toronto. Today, there are still very few corporations throughout Canada and the United States which actually provide cardio-vascular exercise testing in-house. At Xerox Square in Rochester, New York, prior to any executive going into a fitness programme, the participant is given a cardiovascular exercise test while on the treadmill. The most sophisticated industrial fitness programme is Exxon Corporation in New York City, where a full time cardiologist, M.D., two exercise physiologists, Ph.D.'s and physical fitness specialists run the company fitness programme. The results are tabulated and put on a computer for research purposes. The following photos are examples of Xerox fitness facilities or programmes:



PHOTO #1—Xerox International Center
for Training and Manage-
ment Development Fitness
and Recreation Center

PHOTO #2—Exercise Testing on Treadmill

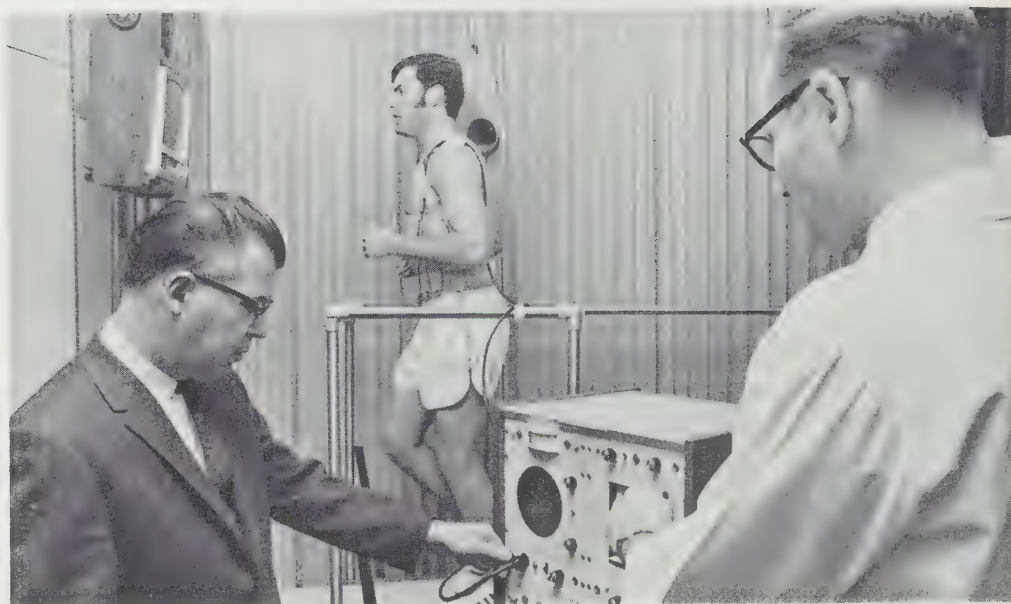


PHOTO #3—Executive Physical Fitness Programme

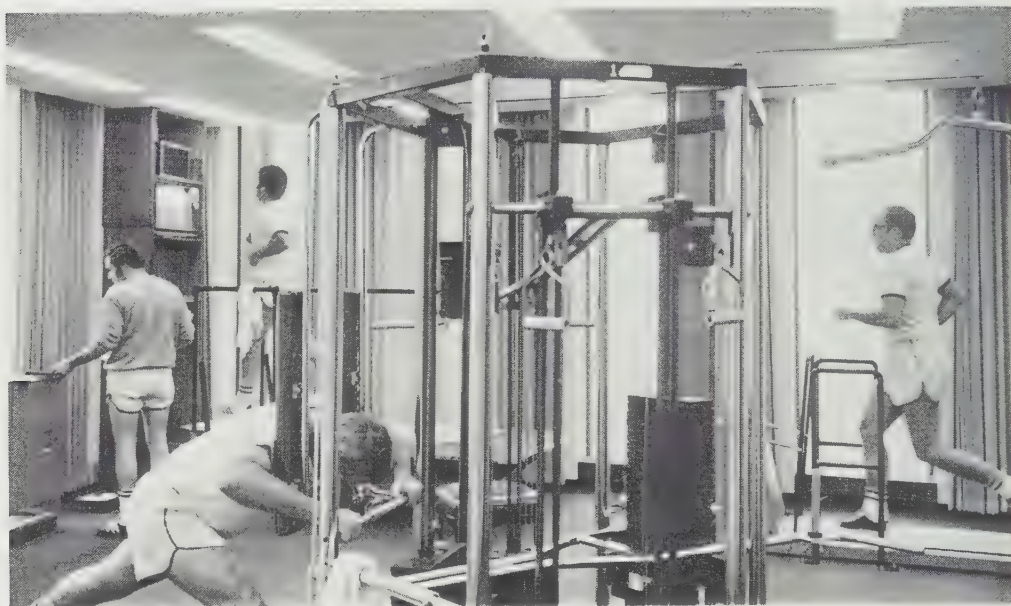


PHOTO #4—Employee Physical Fitness Programme



MOTIVATION/COMMUNICATION

Before a fitness programme in any corporation can start, employees, especially top management, have to be motivated on all aspects of physical fitness. Otherwise, the physical fitness programme is not going to get off the ground. Programmes can be promoted by word-of-mouth as well as through company flyers, posters and newsletters. Seeing the results of an individual that has been in a fitness programme and what it has done for him or her is another way of promoting the programme. Another motivating factor is that of incorporating an awards programme involving the use of photos, certificates and trophies. Other incentives include speakers and films.

In conclusion, after a physical fitness programme has begun the objectives of the programme must be studied to see if they are being met. If they are, then the fitness personnel can build on the strengths of the programme and incorporate new ideas. If the objectives are not being met, then the programme must be re-evaluated and the weaknesses corrected.

Again, I would like to say thank you for having me here today and I wish you much success with your corporate physical fitness programmes.



WORKSHOPS



GENERAL WORKSHOPS

The second day of the conference was reserved for workshop discussions. The delegates were divided into 18 multidisciplinary (employer, employee and health professional) groups and met with their workshop leaders to consider the various aspects of the subject area, after hearing presentations on medical clearance, legal implications, facilities, programme and administration. The delegates addressed themselves to all major aspects of the issue—*employee physical fitness*.

Tuesday Workshop No. 1

LEADER: Don Bailey, Ph.D.,
Professor of Physical
Education,
University of Saskatchewan.

1. Recommended that the Government make available several motivational packages to be used by industry for the purpose of motivating employees towards an increased level of physical activity.
2. Recommended that industry encourage the Government to continue in efforts to improve the quality and quantity of school physical education.
3. Recommended that Government create a central information exchange on what various companies are doing in the area of employee fitness, to be available as industry and/or employee groups become interested.
4. Recommended that a performance award scheme for adults be developed similar to the fitness award scheme for children.

Tuesday Workshop No. 2

LEADER: E. W. Banister, Ph.D.,
Department of Kinesiology,
Simon Fraser University.

1. The position of the Federal Health Minister and his Provincial colleagues is paradoxical vis-à-vis the apportionment of money to preventive schemes, (which is essentially what employee physical fitness is concerned with) only in the sum of approximately 5% of Federal or Provincial Health budgets, respectively. The statement that no federal monies are available to encourage industrial schemes is irreconcilable with present health budget disbursements. *It is recommended* that 15-20% of current budgets are directed to promoting, in every way, increased industrial fitness schemes, facilities and professional staff to the limits of cooperation afforded by industry and the limits of available funds. Simultaneously, retrenchment on provision of conventional medical care schemes would have to occur.
2. There is a dearth of good data on the cost to industry and the economy generally of absenteeism due to so-called alleviable or preventable sickness—the non-specific, hypokinetic or vaso-regulatory asthenetic syndromes in addition to debilitation-induced accidents.
Correspondingly, there is even less data concerned with the cost-benefit to industry on exercise regimens encouraged within the work-force.
It is recommended that research monies be made available for:
 - i) Retrospective analysis of any available records in industry over the past 25 years which give insight into the degree to which the economy has suffered from absenteeism, from every kind of disease, particularly degenerative ones.
3. Industry should not reject its role in employee physical fitness schemes out of any sense of adopting an unenviable “paternalistic posture”. It has prime qualifications from several points as

a motivator in such schemes which include:

- i) Money resources;
- ii) Space resources;
- iii) Medical resources (in the case of those companies having occupational health programmes);
- iv) Continuance of good programmes in exercise which have begun and carried out throughout school years (hopefully).

4. It may be argued that a greater degree of health screening and follow up may be achieved for the work force in industrial employee fitness schemes, which embrace a nursing section and physician involvement also, than can be achieved in episodic visitations to a family physician. This is very evident in diet and smoking counselling and hypertension pharmacological control.

It is recommended that industry, by both individual and participatory-group activity, become involved in seeking implementation of employee fitness training schemes by:

- i) Building and staffing with good practical and knowledgeable personnel, new facilities;
- ii) Augmenting, as above, existing facilities;
- iii) Adopting individually or by group, communities of high corresponding workers' density (i.e. communities where a major portion of their workers come from).

5. Management is presently often ill-advised on available literature on the potential benefits of schemes, the costs of incorporating schemes, the types of activities and professional personnel most suitable to local conditions, architectural planning, etc.

It is recommended that a resource file of personnel able to provide simple quantitative data bearing on every aspect of implementing industrial employee fitness schemes be drawn up by the Department of National Health and Welfare and that regular updated information be circulated to every industry in the country regarding the extent, site, type and cost-benefit of available schemes.

6. *It is recommended* that Workers' Compensation Boards across the country should consider that preventive schemes of exercise are good business and allocate funds to them as such.

Tuesday Workshop No. 3

LEADER: A. Murray Dick,
Director of Recreation,
Dominion Foundries and
Steel Ltd.

1. It is recommended that Recreation Canada provide specific information on methods of motivating employees in a physical fitness programme.
2. Recommended that Recreation Canada: look into a standards and awards system; a programme of family involvement; encourage greater physical fitness education in schools; include nutritional education along with physical education; provide the services of a fitness person who could be described as a motivator for use by individual organizations; and provide a publication for interested employee groups, on at least a quarterly basis, with participating companies supplying ideas.
3. Recommended that this conference be followed up with regional meetings and provincial conferences to involve other companies.
4. Recommended that Recreation Canada send out a follow-up letter to all delegates for their personal opinions.
5. Recommended that legal implications should not retard programmes.
6. Recommended that Recreation Canada investigate that, companies may receive tax relief in the provision of company physical fitness facilities.

Tuesday Workshop No. 4

LEADER: Ron Ferguson, Ph.D.,
Physical Education Department,
University of Montreal.

Given that management of corporations or institutions is the decision-making body, it should be the first to be motivated to establish programmes of physical activity for the development of physical fitness. An aggressive approach should be made to those corporations whose interest is manifest by their presence at this conference.

THEREFORE:

1. The delegates, who are now motivated to action, should receive by the end of December 1974, a non-official photostat copy of the major presentations given at the conference, in order to analyse in the light of this information, their respective situations and prepare for the development of future programmes.
2. Given the existing link between Participation Canada and Canadian Corporate Bodies, regional consultant groups should be established, under the direction of the former, and sensitize management to the benefits and implications of physical activity programmes for their employees.
 - suggested consultants could include a social marketing person, physical activity specialist, medical resource person.
 - role of this group would be to make a presentation, on invitation to management.
3. Following this initial contact, and with the company agreeing to have its situation analyzed, a working group composed of company delegates and specialist consultants should be formed to prepare a final proposal for the establishment of a physical activity programme for fitness for that corporation.

4. The consultants would be chosen specifically to respond to the needs of that particular corporation, e.g. legal, medical, labour, human relations, programming, evaluation problems. This could be performed on a contractual basis and sponsored by appropriate government agencies.

It is foreseen that, in many cases, a specialist in physical activity would be desirable.

Expertise of full specialist would include liaising in the following areas: Physiology of exercise; basic abnormalities of metabolism, circulation, skeletal and respiratory systems; human behaviour and motivation; business administration; preventive medicine concepts; and current health hazards.

(These types of integrated training programmes are available in some areas already).

Tuesday Workshop No. 5

LEADER: Jean-Louis Foisy,
Directeur Général,
Association des professionnels
de l'activité physique.

Considering the concepts of: quality and length of life, security of employee, increased creativity and productivity, increased positive attitude, improvement of social relations between employees and employer, and others, it is important to pursue and accelerate initiatives which are aimed at the improvement of employee physical fitness.

Recommendations are summarized, thus

1. Recommended that the federal government pursue its actions in the area of physical fitness for Canadians, and one of the most important of these actions should be to promote, within provincial government jurisdiction, the creation of organizations specifically responsible for the improvement of physical fitness.

The priorities of these organizations would be to: make available all information and promotion related to the improvement of physical fitness, encourage local and regional initiatives, provoke initiatives, co-ordinate the research sector involved in physical fitness, be aware of all available resources and resource people on the subject, and others.
2. Recommended that government action (federal and provincial) pursue an accelerated physical fitness programme for public service employees as well as affiliates. These initiatives undoubtedly will influence the private sector.

3. Recommended that special emphasis be given to the employee physical fitness of teaching personnel (administrators, teachers, support staff). The advantages of these initiatives are: the improvement of physical fitness of teaching personnel, the availability of facilities, equipment, specialists, budget, positive repercussions or development of positive attitudes of agents intervening directly among the employees in training, (this results in better physical education programmes in terms of quality and quantity), once the experience gains momentum, invitations should possibly be made to employees in other activity sectors within the same working group (policemen, firemen, businessmen, housekeepers, etc.) and others.
4. Recommended that priority be given to personnel management in enterprises or organizations with regard to employee groups to be served, the reason being that the increase of initiatives in physical fitness depends on management.

Tuesday Workshop No. 6

LEADER: Kathy Gourlie,
Official Languages Branch,
Treasury Board Secretariat.

During the morning, the group made some general observations which set the framework for the development of recommendations or action proposals. Concern was expressed for the lack of awareness in the Canadian population of their own level of fitness, the individual's need for fitness programmes and information on how to obtain appropriate levels of fitness. The lack of opportunity for young people to be exposed to fitness as a part of a lifestyle in the educational curriculum was felt to be a factor leading to lack of interest and participation at the adult level.

RECOMMENDATIONS

1. Recommended, to Provincial Governments, that physical fitness programmes be made an integral part of the school curriculum at the elementary, secondary and post secondary level.
2. Recommended that the Federal Government prepare a special information mailing to all industry (management) labour and/or employee organizations to make them aware of the need for a physical fitness programme, the cost of poor health to business and the individual, and the benefits accruing from action programmes.
3. Recommended that insurance companies explore the possibility of reduced health insurance premiums for participants in recognized programmes and companies sponsoring same.
4. Recommended that the Federal Government carry on with the Olympic Lottery concept (perhaps under aegis of Participaction) to fund national physical fitness programmes of the widest scope.
5. Recommended that management of corporations endorse physical fitness programmes, encourage participation of employees, explore provision of facilities (outside, in-house or others), and develop and train potential leaders through sponsorship of a special training course (university, community college, adult education).
6. Recommended that Participaction advise television to encourage on-the-spot exercise breaks by providing a spot exercise demonstration and inviting viewer participation.
7. Recommended that the Federal Government and C.B.C. replace commercials with programmed exercise breaks.
8. Recommended that the Departments of Parks and Recreation or equivalent bodies draw up a community inventory of facilities for physical fitness activity, including cost and utilization data which would be available to industry and individuals.
9. Recommended that Service Clubs be encouraged to support community physical fitness projects as part of their nationally recommended programme.
10. Recommended that each employer explore available "on the job" space and facilities which could be readily converted for physical fitness activities either on a part-time or full-time basis, e.g. Conference room, Cafeteria, Training Room, Dead storage space, Roof, and Parking Lot.

Tuesday Workshop No. 7

LEADER: Jean Everard,
Project Officer,
Canadian Nurses' Association.

A summary of our discussion for practical implication, as well as ideas and observations, is presented under the specified headings.

1. FACILITIES:

Recommended that all levels of government be involved in providing facilities so as to prevent duplication, but to ensure availability of a broad range to all. (Different types of facilities are required for individual preferences: small, modest, conveniently located facilities preferable to large centralized one.)

Recommended that a travelling van, with testing devices and fitness teams, be made available to the general public.

Recommended that transportation to existing facilities in urban areas be sponsored.

2. LEADERSHIP:

Recommended that responsibility of group members encourage existing programmes and be committed to beginning new ones.

Recommended that all levels of government should be involved in providing facilities.

Recommended that labour and management work together to provide leadership in instituting fitness programmes.

Recommended, by Labour, that physical fitness programmes could be added to contracts as a fringe benefit.

3. ORGANIZATION:

Recommended that labour and management support physical fitness programmes.

Recommended that all programmes be evaluated to meet as yet undeveloped standards to ensure effectiveness of programme.

Recommended that financing be participatory by individuals, unions and companies to ensure genuine involvement at all levels.

4. MOTIVATION:

Negative aspect—that fear is still a highly motivational factor with some individuals. Publication of statistics on morbidity and mortality rates are still useful.

Positive aspect—distribution of literature and films to the unions on a continuous basis.

Recommended that bicycle racks be put in some car park areas, that cartoon-type signs in elevators encouraging the use of stairwells, questionnaires on, "How is your health" be distributed to companies and unions with feedback printouts, that incentive grants or tax deductions on materials for building facilities and/or equipment be used in approved programmes.

That dues paid for approved programmes by the individual be tax deductible, that better use of T.V. and other communication media be used for the promotion of physical fitness, that some type of bonus be given by the company upon gaining completion of a course for instructors in fitness, i.e. as in safety programme, that brief rhythmic exercise periods be interjected between public school daily classes to develop a habit of daily exercise in young people before entering the labour force, and that programmes be aimed at all age levels and locations, i.e. housewives, students, etc. to be co-ordinated with those programmes developed by the labour force for group support.

Tuesday Workshop No. 9

LEADER: Russ Kisby,
Sport Participation Canada,
Toronto.

The following recommendations were agreed to:

1. Accepting the tremendous influence of the mass media in determining our lifestyle, it is recommended that much greater utilization be made of effective media advertising. (This advertising must go beyond that of a "public service nature" as currently being done by PARTICIPACTION, and should be jointly financed by government and business. The primary aim of this advertising should be to create a positive atmosphere conducive to stimulating changes in companies, as well as other segments of our society, related to fitness.)
2. Recommended that insurance companies, including government health care schemes, be encouraged to provide more favorable (or preferred) rates to both companies and individuals participating regularly in fitness programmes. (The theory here is that fit people are statistically healthier and, therefore, should not have to pay the same premium as the unfit. Such preferred rates would also provide incentives to companies to initiate employee fitness programmes.)
3. Recommended that governments consider granting total tax exemptions for companies in the cost of establishing fitness facilities and/or programmes. Similarly, individuals should be able to deduct from their income tax the cost of fitness programme fees. (These are both seen as important government incentives to encourage individual and company action.)
4. Recommended that companies encourage their Medical Directors, where applicable, to prescribe fitness programmes to individual employees, and like other forms of necessary treatment, the cost should be handled by revised medical service scheme allocations.

5. Recommended that in high density areas, or where a number of companies are in close physical setting, the shared use and support of a comprehensive, centralized fitness facility and programme be initiated. (The economic and legal advantages of such a set-up warrant its serious consideration by companies.)

Inasmuch as the above recommendations may take time to implement, it was agreed that there are a number of immediate steps which government, management and union leaders can take, upon return from this conference. They include: consideration, by government, of sponsoring a "National Fitness Week" similar to the annual safety week, with all its related promotional and educational material; initiate educational information campaigns within companies utilizing inserts in pay envelopes, speakers, convention or meeting themes on fitness, and heavy utilization of existing company and union communication vehicles (newspapers, magazines, etc.); make educational material on fitness available through medical centres, and nutrition information available through the cafeterias; union and management jointly develop educational programmes on fitness, using the same co-operation as exhibited in conducting safety programmes or the United Way Campaign, should be encouraged.

Tuesday Workshop No. 10

LEADER: Huguette Labelle,
Principal Nursing Officer,
Health and Welfare Canada.

1. In order to "sell" senior business management on the value of implementing physical fitness programmes in their companies, Health and Welfare Canada should make available to them the following documents:
 - i) *immediately*—the "Highlights" of the National Conference on Employee Physical Fitness;
 - ii) *as quickly as possible*—a "know-how" booklet outlining: the *raison d'être* for physical fitness programmes; cost-benefit analyses; legal, physiological and psychosocial factors involved; factors to be considered in planning programmes; other empirical data relating to *specific* employee physical fitness programmes already in operation (preferably in Canadian industry, if such data is available);
2. Recommended that, with a view to *reinforcing* the empirical data referred to in 1. above, on a more specific basis, Health and Welfare Canada should give *priority consideration to designating* funds from its current budget to undertake/commission *research in fitness evaluation programmes*, (and encourage the coordination of existing public and private programmes) related to *a number of companies in various Canadian industrial sectors* with a view to determining how these companies benefitted from undertaking physical fitness programmes, over a period of time (i.e. a "before" and "after" look). (The empirical evidence from such studies would be extremely useful in helping to persuade skeptical executives as to the intrinsic worth of, and benefits emanating from such fitness programmes. In the meantime, companies which have already adopted employee physical fitness programmes should be encouraged to build up their own data bases to be pooled, for future use by Fitness Canada).

3. Recommended that companies distinguish between physical fitness programmes and *other physical activities*, organized by company sports' associations which are already in place, and to offer both, moral and financial support.
4. Recommended that labour/employee representatives of a company be involved in the planning and implementation of the physical fitness programme once the decision has been made by management to involve the Company. (Motivation must begin with the employees, their families and the company health officers; and it must be stressed that all programmes are voluntary).
5. Recommended that companies be encouraged to expose middle management to physical fitness programming concepts, during the course of *management training programmes* over a period of time, with requisite testing services made available from Health and Welfare Canada.
6. Since physical fitness programmes represent a new dimension reflecting a new social role for employers and employees, it is recommended that employers redefine their role in this context. (Further, there is a need for a *public education programme* among the employees, once such programmes have been established as a priority by management).
7. Recommended that the use of *existing facilities*, both within companies and in the community, be maximized.
8. Recommended that public education programmes such as "Participation" be continued to instill interest in our children at an early age, through the school system.
9. Recommended that Health & Welfare provide consultative services, in order to assist agencies in planning employee fitness programmes.

Tuesday Workshop No. 11

LEADER: Gil Levine,
Research Director,
Canadian Union of Public
Employees.

MOTIVATION A. EMPLOYERS

1. Recommended that National Health and Welfare publish a brochure available to employers indicating the benefits, to themselves, of industrial fitness programmes (showing effects on absenteeism, employee morale, productivity.)
2. Recommended that fitness tests be administered to top executives of industry and labour to act as a motivational vehicle to implement fitness programmes in their own organizations. (This should be followed up by recommendations as to their own active health programme.)
3. Recommended that an aerobic capacity test be administered, by physicians, when giving patients their annual check-up.
4. Recommended that tax incentives be given to employers on introduction of employee fitness programmes in their organization.
5. Recommended that provincial governments encourage Workers' Compensation Boards to make employers aware that fitness programmes lessen the incidence and gravity of accidents.

MOTIVATION B. EMPLOYEES

1. Recommended that metropolitan governments publish inventories of local facilities, resources and programmes available in their area and distribute this information to employee groups.
2. Recommended that National Health and Welfare publish on site exercise programmes for sedentary workers, indicating how they should be implemented. (Since the motivation is different between men and women, separate programmes are advised.)
3. Recommended that National Health and Welfare market cassettes containing music and exercise instructions for on-site exercise programmes.

4. Recommended that membership fees to recognized fitness institutions be made tax deductible.
5. Recommended that National Health and Welfare publish and distribute posters discouraging the use of elevators.

FACILITIES

1. Recommended that National Health and Welfare market film strips/slides showing examples of industrial exercise facilities that are applicable.
2. Recommended that National Health and Welfare distribute brochures showing blueprints for space use, starting from the most simple. (Included in this should be the cost factor with details of decoration, floor coverings, equipment, etc. e.g. Pamphlet entitled, "How to Equip a Fitness Room for \$5,000" etc.)
3. Recommended that Y.M., Y.W.C.A.'s be encouraged to reach out to local industry to organize employee group fitness programmes using "Y" facilities and leadership. (Non-peak periods could be utilized for this.)

LEADERSHIP

1. Recommended that provincial governments be encouraged to set up a conference on Employee Fitness.
2. Recommended that educational institutions and "Y" 's be encouraged to conduct training programmes for "on-site" industrial fitness instructors. (Employers would pay for suitable personnel to attend such courses.)

ORGANIZATION AND IMPLEMENTATION

1. Recommended that organization and implementation be adapted to suit the individual or specific needs of any given situation.

Tuesday Workshop No. 12

LEADER: Jim MacDonald,
Director, Social & Community
Programs Department,
Canadian Labour Congress.

The discussion of the group began with questioning the assumption of the conference that "generally, Canadians are unfit". This was considered to be too broad a generalization. The group noted, therefore, that the modern urban condition of much of Canada has increased the number of Canadians involved in sedentary occupations. Other functions of society (education, health programmes, recreation, social activities) have been unable to date, to promote an optimal or even operational level of physical fitness. Employee physical fitness programmes have the potential *to increase the capacity* of the individual to cope with stress, and attain or maintain good health. Our group has defined *physical fitness* in its *broadest sense* as, being "the ability of the individual to operate at his physical, mental, occupational and social optimum, including the capacity to cope with a given level of stress".

For the sake of this conference, we have narrowed our vision and concern with the definition of physical fitness sent out by the President's Council on "Physical Fitness and Sport": the ability to carry out daily tasks with vigor and alertness and without undue fatigue, and with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies". (Physical Fitness in Business and Industry, President's Council on Physical Fitness and Sport, Washington, D.C.)

In taking this definition as our aim or objective, our group proposes the following steps for meeting this objective.

1. Recommended that awareness be developed to:
identify the problem by collecting data base, and ensuring adequate research in area of fitness; develop and distribute promotional material involving both the Federal and Provincial Governments; show by example with the

- Federal and Provincial Governments establishing or supporting pilot projects; use slogans and multi-media to reach the general public.
2. Recommended that existing and potential resources be determined by: taking inventory of fitness leaders (at all skill levels); determining training programmes required; taking inventory of physical resources; assessing potential of offices and plants, making sure of existing areas and facilities, e.g. parking lots, stairways and develop as necessary.
 3. Recommended that programmes be developed to: determine the nature of the programme in relation to aims and objectives; involve employees and assure their support of the programme as prerequisite to planning; to ensure that union and management consider the negotiation implementation of the programme (e.g. supply and use of facilities).
 4. Recommended that the overall operation and management be determined by: cooperation of government, management and labour at all levels (Federal, Provincial, Local) endorsing, promoting, and encouraging the development and use of fitness programmes; government consultants being made available on request to help with the design and implementation of local programmes; ensuring that appropriate individuals are designated to be responsible for implementing programmes; considering *incentives* for participants.
 5. Recommended that evaluation procedures be built in, in all proceeding steps.

Tuesday Workshop No. 13

LEADER: Grant McKeen,
Associate Director,
Action B.C.

RECOMMENDATIONS

1. Recommended that Recreation Canada make hard data available which relates to existing Canadian fitness programmes to include costs of facilities, equipment, cost of programmes, cost sharing, numbers involved, absenteeism, turn-over in personnel, promotions, transfers of job, classification of employees involved in the programme, productivity of employees involved in the programme, and other related data.
2. Recommended that Recreation Canada implement, on a regional basis, a number of demonstration model programmes. Specifically, we encourage Recreation Canada to design these models with the following input data as guidelines.

RECOMMENDED THAT LARGE INDUSTRY:

identify a major industry in each region, and convince the management of that industry of the benefits, to them, of having healthy positive employees; motivate the employees of the advantages of positive health with an awareness programme; develop a process for employee input to programme planning for the model; plan for the facility to be on site which should include showers, lockers, towels and be available to all personnel. An off-site facility should also be considered if there is no space available for this programme; create a motivating environment of colour, tone, lighting, style, etc. in the facility; gear the programmes to the needs of the individual employee and be fun-oriented and flexible; make training opportunities available for upgrading personnel providing the leadership for this programme; suggest personnel for this model be volunteer, paid or consultants; build-in an evaluating system to provide the collection of hard data.

RECOMMENDED THAT SMALL INDUSTRY (COMMUNITY MODEL):

be encouraged to partake in a community model, utilizing existing delivery systems particularly the YMCA, YWCA, Parks and Recreation and use of schools, since they do not have the capital funds to develop a programme within their buildings; facilities in the community be utilized on a fee for service basis; (These are the use of schools, colleges, universities, existing community agencies and clubs, parks, churches, industry club rooms and golf courses for specific uses in the winter, like cross-country skiing); personnel be supplied by the YMCA, YWCA, community recreation and schools; a sound leadership programme be designed to ensure that the programme will be successful; programmes be geared to the needs of the employee and should involve his/her family; (It should begin with simple fun programmes such as walking, skipping, etc. and considerations should be given for an outdoor fitness circuit if one is not available); a strong continuing motivation programme be implemented both at the community and industry level, and provision to speak at service clubs; unions be encouraged and geared to the level of the audience; and any combination of large industry, small industry and community be considered for a model demonstration.

3. Recommended that management in industry include opportunities for employees to attend physical activity programmes on the same basis as present existing education programmes in industry.

Tuesday Workshop No. 14

LEADER: William V. Owen,
Program Director,
Vancouver Metropolitan
Y.M.C.A.

1. Recommended that since the leadership style is one essential factor in sustaining fitness programmes, fitness marketing, fitness leadership and exercise management workshops be conducted on a regional basis for those persons in direct fitness leadership roles, and these courses should be operated with Federal-Provincial cost-sharing and regionally identified resource personnel with Recreation Canada taking this initiative.
2. Recommended that the concerns and proceedings of this conference be communicated to the Canadian Architects' Association.
3. Recommended that industry, management and labour assume shared responsibility for fitness awareness, motivation and identification of existing delivery systems available in the community, since there is a question concerning the desirability and practicality of industry or labour initiative, in the development of expensive and elaborate on-site facilities and equipment for purposes of employee fitness (the purchase of services and other contractual arrangements may provide a more practical and flexible solution to the problem at this time.)
4. Recommended that Recreation Canada make available a catalogue of available resources on employee fitness including: detailed descriptions of existing programmes presently operating with cost benefits, recommended facility, equipment, budgets, operating policies and organization; methodologies for awareness programmes; and motivational materials that have proven effective to date.
5. Recommended that Conference proceedings be circulated to all delegates along with model programmes, ranging from the simplest to the more sophisticated, including a testing process for the introduction and implementation.

6. Recommended that Recreation Canada be encouraged to secure a regular awareness and/or interpretive fitness message on the C.B.C. Public Affairs Programme.
7. Recommended that PARTICIPACTION develop and emphasize a series of marketing-motivational materials which would have particular value to employers, employees and labour groups.
8. Recommended that Recreation Canada identify national agencies (public and private) presently involved in fitness programming, and encourage these agencies to take initiatives in establishing employee fitness programmes in co-operation with labour groups and the business sector: to work cooperatively and with these groups to monitor such programmes in different size communities and in a cross section of industry.

Tuesday Workshop No. 15

LEADER: Roch Roy,
Director, Department of
Physical Education,
University of Sherbrooke.

1. Recommended that the implementation of any physical fitness programme be a cooperative effort between employee and employer and be established on a cost-sharing basis.
2. Recommended that Recreation Canada consider some form of initiative grants or financial concessions to encourage companies and industries to initiate an employee physical fitness programme. (Provincial governments should be involved in this process.)
3. Recommended that labour unions be encouraged to state clearly their interest in fitness programmes for their membership, as part of their labour policies.
4. Recommended that names of multi-discipline experts be made available to companies and industries in initiating and developing physical fitness programmes tailored to their specific needs (geographical location, ethnic groups, job conditions . . .).
5. Recommended that Recreation Canada be encouraged to develop and distribute, to all interested bodies, resource guidelines on such topics as medical clearance, legal implications, facilities, programme and administration, motivation and statistical data on present participation levels.

Tuesday Workshop No. 16

LEADER: Rob Sherry,
Director, Physical Fitness,
YM-YWCA, Ottawa.

Group 16 looked initially at four areas of concern and then honed in on *motivation and leadership*.

THE MAJOR AREAS OF CONCERN WERE:

A general requirement for clean and well-supported documentation of studies related to the benefits of exercise, for both the employer and employee. (Special notation should be accorded studies on human physiology, absenteeism and costs. Studies of longevity might be of greater value than the standard short-term attempt, and the expressed need for physical fitness programmes will then extend from management down);

Costs will be carried by both employee and employer and should reflect on their enthusiasm and appreciation for the benefits listed above, wherever possible, facilities for physical fitness programmes should be in the existing building and should be shared by both the community and industry; and stress reduction should be highlighted as a positive major benefit of exercise.

MOTIVATION

The key to proper motivation is an adequate programme of education and re-education including the need to communicate the information acquired; programmes of physical fitness should be non-competitive (self-centered, altruistic egotism), fun and enjoyable with a high level of positive re-enforcement, and promotion of a shared concept between management and the employee is essential. It is advisable to: use present facilities, make them open and available, supply athletic equipment for individual activities, destroy negative myths on exercise, and to continue to have Recreation Canada and Participation support the need for physical fitness. (re. what it is, the approach, the concept of frequency, intensity and duration). It is not advisable to build expensive facilities or use fear as a motivational tool. Education of individuals

should utilize government, employer and trade union resources.

LEADERSHIP

The Federal Government should assist with the coordination of information and periodic, but regular, evaluation procedures:

Recommendations and proposals for programme emphasis should be made in cooperation with government, management and trade unions, and should include shared costs and/or leadership development; and leadership should be constantly updated using university, library, government and clinic resources.

RECOMMENDATIONS

1. Recommended that the Provincial and Federal governments be approached to develop a tax benefit for personnel and/or industries participating in recognized physical fitness programmes.
2. Recommended that insurance companies (Life, Auto, Health) be persuaded to grant a reduction in premiums or increased benefits on the basis of participation by clients in recognized physical fitness programmes.

Tuesday Workshop No. 17

LEADER: Vance Toner,
Director,
Department of Physical
Education and Recreation,
University of Moncton.

On a long term basis: the problem of employee fitness could be greatly effected by the first two recommendations:

1. Recommended that special attention be given to physical education at the pre-school and elementary school level, and the leadership be innovative with particular attention being given to needs of girls.
2. Recommended that, in the planning for programmes, the family unit be regarded as a basic target for life-style adjustments.
3. Recommended that, although government's intervention in public education and facilitating communication is essential and welcome, the major thrust for action be considered as belonging to the employer and employees.
4. Recommended that management accept sharing in the responsibility for the delivery service of a physical fitness programme.
5. Recommended that employee unions or associations become better equipped to motivate employees.
6. Recommended that a programme must have a reward system to be successful since the individual thrives on positive reinforcement.
7. Recommended that an occupational health department be included in every industry.
8. Recommended that the occupational health department be situated, administratively, so as not to represent a vocational threat to the employee, but rather as an agency which will serve to improve or protect his health status.
9. Recommended that, where comprehensive occupational health departments are in evidence that mechanics be instituted to allow medical personnel of that department to treat identified degenerative diseases.

10. Recommended that employees and employers do not view physical fitness as a bargainable issue but rather as a determinant in the quality of life of the individual for which they must take combined responsibility for providing the education and the opportunity.

Although quality physical fitness programmes, if properly evaluated, could document their economic worth, it was felt, by the group, that physical fitness does not need to be justified on any other merit than its contribution to the quality of life of the individual.

Tuesday Workshop No. 18

LEADER: R. Wanzel, Ph.D.,
Chairman, Sports
Administration,
Laurentian University.

RECOMMENDATIONS MEDICAL

1. Recommended that a questionnaire be developed and tested for medical clearance into fitness programmes which can identify high-risk people which should then be publicized as to its availability.

FACILITIES AND EQUIPMENT

1. Recommended that the Canadian corporations, immediately, consider converting 'dead' building space into fitness areas which are attractive and in some manner, providing shower and change facilities.
2. Recommended that the community-school concept be further investigated to ascertain if business firms close to a school could use the facilities in the morning or at noon, etc. to operate fitness programmes.
3. Recommended that Recreation Canada gather information on all types of exercise equipment such as: cost, Canadian distributors and the effectiveness of the equipment. As well, equipment 'packages' based on cardiovascular fitness programmes should be prepared, based on various sizes of employee programmes (small, medium, large). (What should be included and what will the 'package' cost?)
4. Recommended that corporations consider flexible working hours so that employees could make use of existing downtown facilities (e.g. YMCA). This would alleviate the problem of crowded facilities at noon, etc.

MOTIVATION

1. Recommended that corporations survey their employees to ascertain fitness participation interest levels. (It is hoped this information would help upper management to develop a policy on company fitness programmes.)

2. Recommended that Recreation Canada gather and distribute all available information on company fitness programmes and their effect on absenteeism, turnover, productivity and morale, etc. (This information would be used to 'sell' upper management on the fitness programme concept.)
3. Recommended that Recreation Canada gather information on physical activity and its effect on cardiovascular disease and disseminate it to occupational health nurses, corporate management, corporate medical directors, unions, etc.
4. Recommended that Recreation Canada gather information on various company fitness programmes and the way the company perceives the usefulness of the programme. (This information should then be sent to all Canadian corporations.)
5. Recommended that corporations publicize, within their firms, any employees who have achieved success through taking part in fitness programmes (loss of weight, lower heart rate, etc.) (This might help to motivate other employees to consider starting a fitness programme.)

RETRAINING

1. Recommended that the Canadian Government, universities, YMCA's, etc. offer retraining programmes for various groups, such as occupational health nurses. (This retraining would provide information on stress testing, strength and flexibility tests, etc. and would make more efficient use of people presently employed by a company.)

LAND DEVELOPMENT

1. Recommended that municipal planning commissions, together with parks and recreation personnel, study the possibility of including parks in the development of industrial areas. (The employees of many companies in the area could then use this area for a variety of recreational pursuits.)

Tuesday Workshop No. 19

LEADER: Kathy Whitty,
Amateur Sport Coordinator,
Department of Youth,
New Brunswick Government.

The delegates discussed various aspects relating to the implementation of employee physical fitness programmes and identified a number of problems. As a result of our deliberations, the following recommendations were unanimously accepted.

RECOMMENDATIONS: "LIFE-STYLE EDUCATION"

1. Whereas there exists a lack of life-style education programmes throughout the total Canadian education structure; and

Whereas this lack of life-style education has a detrimental effect on the self-motivation of employees to participate in physical fitness programmes,

it is recommended that:

the federal government assume a leadership role in the promotion of a life-style education programme and further that the federal government convene a meeting of provincial ministers of health and education, for the purpose of identifying the respective roles of the federal and provincial governments in the implementation of a total life-style education programme.

2. Whereas there appears to be a lack of information on existing employee fitness programmes in Canada; and

Whereas there is a difficulty in motivating business and industry personnel to accept the concept of employee fitness programmes,

it is recommended that:

the federal government compile and distribute a listing of all existing employee fitness programmes, with relevant information on each (cost factors, % participation, etc.); and further

that in cooperation with the federal government, pilot programmes be initiated with major industries/business throughout Canada, (preferably

with hourly rate workers), to study the effects of physical fitness programmes on employees; and that the results of these programmes be made public as a means of encouraging other corporations to undertake similar programmes.

RECOMMENDATIONS: INCENTIVES

1. That the federal government give consideration to instituting a programme of financial incentives (direct grants or tax relief) as a means of encouraging business and industry to install physical fitness facilities and equipment for use in employee fitness programmes.

2. Whereas the success of this conference indicates that business and industry personnel attach a high priority to employee fitness,

it is recommended that:

the federal government (Health and Welfare Canada) consider a follow-up programme to take place within the next twelve months.

The delegates also felt strongly that the following be recommended:

Recommended that when establishing and implementing employee fitness programmes, personnel properly qualified in the areas of health, physical education and recreation be assigned the responsibility of directing these programmes.

Recommended that upon our return from this conference, each delegate make an effort to change his/her life-style and influence, through example, others in our own sphere.

On the morning of the last day of the conference a summary of the workshop recommendations was presented. The delegates then met in topical workshops to discuss and clarify that aspect of the summary dealing with their specific interest.

TOPICAL WORKSHOPS

While a small group of analysts attempted to compile the many workshop recommendations and to prepare them for presentation, the delegates were invited to assemble according to their specific occupational category, to discuss some of the impressions of the conference and to exchange ideas on possible future action programmes.

The three groups that were thus formed represented the Employers, the Health Profession and the Employees, respectively.

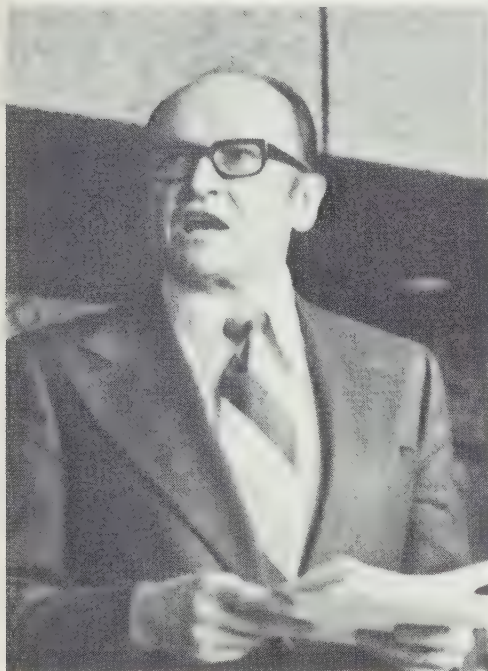
In view of the limited time available, the impromptu nature of the groups, and the informal character of the discussions, no report on these deliberations was expected.

However, the Employee Group did prepare a statement reflecting a consensus of the views of the participants and, since these may well prove to mean a contribution towards achievement of the conference objectives, the Planning Committee decided to include them in this document in the following points: fitness programmes should be instituted in industry; unions, companies and governments should be involved in planning the programmes, with the latter two absorbing the major overall costs; the programme must be a bargaining issue to ensure employee input; participation of employees in the programme must be on a voluntary basis; the CLC and its provincial federations, as well as the CNTU, should be requested to convene provincial or regional conferences on this matter—probably in coordination with the proposed regional conferences otherwise recommended by the National Conference; and these also should feature the fitness tests for participants; the labour movement should consider the possibility of arranging such fitness tests for delegates to its many conventions; and union delegates, on returning to their locals from this conference, should embark on a programme of promoting awareness of this conference and support for its objectives.

SYNOPSIS OF WORKSHOPS

Chairman of Workshop Leaders:

W. Orban, Ph.D.,
Dean,
School of Physical Education and
Recreation,
University of Ottawa.



What I want to do first of all is thank Huguette Labelle, wherever she is, because without her I don't think I would have been ready. She helped to simplify some of this information.

I am going to tell you what we did, how we approached it (so that you will have some understanding of what I am going to say) and then you can throw anything that you want at me, after that. We tried to incorporate the ideas which were discussed and brought forth this morning, from the summarized resolutions and recommendations, which were given to you before this morning's meeting. I am not going to go over the individual specific recommendations, instead I shall give you an overview of the kind of response we got, giving some indication of the direction, if there was a change basically from what was in the recommendations this morning. First of all, I would like to say that all points did not get a consensus. There are quite a few which did not. In fact, we got some very definite disagreement and I thought perhaps to end on a good note, I would tell you what the disagreements were first, then tell you what the positive consensus was.

Firstly, in terms of adding to the programme of the present programmes in industry, the suggestion that we add the fitness programmes to the existing health departments or the occupational health departments met some resistance, particularly in terms of motivation. Some thought that they should be separated because of the connotation of the present medical or health oriented departments in industry. There was some concern in terms of supporting the programme that no capital funds should be used. I am not sure of the implication there, but it was brought to our attention that we should make sure that in the recommendations, when we suggested that industry support physical fitness facilities, that is to exclude capital expenditure. I am sure Mayor Drapeau will be happy that there was some disagreement as to whether or not we should have some type of Olympic lottery to promote or provide funds for physical fitness. There were some people who said, "take it out, we don't want to have it, it is not practical", and some

said, "keep it in", so there was some disagreement in that particular area. There was also some disagreement in terms of the bargaining aspect of physical fitness programmes, as we sort of anticipated that there are two sides to the question. Some people did not want any reference to any bargaining potential related to physical fitness programmes or benefits, while others wanted to leave it in. So, there is definitely some disagreement in that particular area. Other aspects of disagreement were a national fitness week. (Some people felt that a national fitness week was not really one way to try to promote physical fitness, but perhaps having a provincial-sponsored week or eliminate it altogether in terms of other kinds of motivational aspects.) And the question of whether fitness programmes should be done on company time or not, was of course an issue which I don't know whether we will ever settle.

Now, I'd just like to quickly review the areas where there was a fair consensus, in the sense that the general endorsement of the recommendations were made. These are presented to you now. I shall summarize rather than read the recommendations which were developed specifically this morning. First of all, there is a consensus that, in schools—there should be an improvement in the quality and quantity of physical education programmes; there should be more qualified teachers; and there should be an innovative programme which should be made compulsory in the curriculum. Industry has a role to play in physical fitness programmes and it should make physical fitness a priority and develop it. But, a cooperative effort between employer and elected representatives of the employee, sharing the leadership responsibilities in development of the relevant programmes, both in the financing and the leadership aspect is essential.

It is recommended that the provincial government organize a similar physical fitness conference for employees stimulated by the federal government and by industry. There has been a Christmas List for Recreation Canada and here is part of the list: Recreation Canada should identify national agencies, public and

private who could cooperate with industry to provide direction to industry in developing and promoting physical fitness programmes. Recreation Canada should establish regional agencies or groups to sensitize industry on the benefits and implications of physical fitness programmes. Furthermore, Recreation Canada should provide an information kit which would have the cost, utilization of facilities, use of equipment and materials, sample programmes of different types and sizes.

Then, in terms of leadership, the general thrust of the recommendations were that federal and provincial governments and the private sector are all responsible for physical fitness programmes. There is a need for information to exchange fitness happenings between industry, between the various governments, agencies, and private agencies as well. There is a need for a listing of information—of consultants, legal and medical aspects related to programming. Industry must take the initiative in instituting programmes and, I think the emphasis here is that industry is really basically responsible for taking some initiative in instituting programmes by providing required training, upgrading, updating of its programme leaders. There is a need, it was felt by at least one or two groups, for a public statement of agreement on physical fitness by all levels of government.

Then, in terms of motivation, generally the motivational resolutions and recommendations were accepted. I think we probably got another ten or twenty ideas of ways to motivate which are really modifications in a sense or elaboration of the original recommendations, so I won't go through those—except that in one recommendation it was suggested that the form of motivational aspect be structural—the differentiation should be made in the operational organizational structure of the medical services as opposed to the physical fitness programme services. In other words, there was some indication that if you related it too closely to the medical aspect you might destroy some of that incentive or the stimulation in some individuals to want to participate.

Finally, in the section of implications, the consensus which appeared from the reports which were presented to us was: that governments of all levels be encouraged to allocate funds or provide incentives for physical fitness programmes—that Recreation Canada has a vital role to play in the motivation, future assistance in the development of fitness programmes and in programme evaluation. (For example, Recreation Canada has a responsibility to provide guidelines in developing, planning and implementing physical fitness programmes.)—for identifying the legal and medical precautions to be taken in establishing physical fitness programmes—for the publication of the proceedings of this conference with the circulation of a draft proceedings in the immediate future. There seemed to be a majority feeling, a consensus, related to the managerial and labour relationship in terms of fitness programmes. There should be a common interest in the development of these programmes. Industry should attempt to have some influence on the quality of life and the lifestyle of the individuals related to their particular endeavours. There was certainly some consensus in some groups, although no disagreement in the terms of the majority, of the recommendations that industry be encouraged to take the responsibility for the development of physical fitness programmes, and designate individuals in their corporations to do this. Such a person or group of people who have this responsibility should serve as a liaison with the community and other related agencies. And this, of course, shows up in the total picture in terms of the use of facilities and equipment of the community. It seems important to utilize, to maximize, as one of the resolutions this morning said, to maximize the use of the facilities and equipment (there should be a good relationship between industry and the community). Programmes can be introduced on an interesting and modest scale, that is you don't need high cost equipment, beautiful furnished facilities to be able to implement a programme. But the important thing is: the desire to do so by labour and management, and it can be done.

Then finally, there were two specific recommendations, one was a recommendation and it is worthy of repeating—that Health and Welfare Minister Lalonde send a letter immediately to all the Presidents of all the companies, represented at this conference, encouraging them to give serious consideration to the representatives' feedback to this conference. In other words, to support you people who have been here so that you are, and your president is, cognizant and aware of what has gone on and the interest that the Minister is taking to it. And, that a further letter should be followed sometime in February which would again re-emphasize to your President that it is important for him to pay attention to what you have to say and what you bring back from this particular conference. Finally, and I must say this is a hint to all of us on the committee, but a strong suggestion, and one group had even a date on it, that the proceedings of this conference, should be out no later than the 24th of December, 1974. It was that specific. Now we couldn't quite accept that, it's just impossible, but I think the general consensus is, and I feel that this is quite strong, that the proceedings should be out as soon as it is possible. It is a strong recommendation by the group and it must be done—that Recreation Canada take every effort to have the proceedings in our hands, the hands of the delegates, as soon as possible.

With that, I want to thank you very much for the tremendous cooperation you have given and wish you well in the future programmes.

RECOMMENDATIONS

Introduction

This report is an attempt to group in a comprehensive way the major recommendations as formulated by the delegates to the National Conference on Employee Physical Fitness.

The purposes of this conference were to stimulate the development of Employee Physical Fitness programmes, and to study the various aspects involved in such programmes, with a view to arriving at specific guidelines and recommendations for action and policy formulation.

To this end, the delegates were divided into eighteen workshops each of which submitted recommendations related to organization, administration, leadership, facilities, education and motivation. Whereas this way, all delegates addressed themselves to all major aspects of the issue, it was felt that the specific expertise represented by the delegates should be fully utilized. Therefore, on the morning of the last conference day, they assembled in re-structured workshops on one of the major topics for the purpose of examining, in greater detail, the recommendations that had been presented previously. This procedure provided a consolidated report of which the following chapters intend to present a synopsis.

The composers of this document fully realize that these summations represent only a general overview and do in no way justice to the excellent rationale which formed in many cases the background of particular statements. Therefore, the complete report on the workshop presentations are included on pages 62-73.

General Observations

The recommendations have been divided into three major categories, namely,

- I. education and motivation
- II. organization and administration
- III. leadership and facilities.

Before dealing with each of these, it seems appropriate to point to a few statements of a more general nature which reflect the overall climate of the conference, namely:

1. Both employers and employees view physical fitness as a determinant of the quality of life of the individual for which they must share responsibility.
2. The introduction of fitness programmes does *not* require elaborate spaces and equipment of a highly sophisticated nature; on the contrary, a number of very effective pilot projects have shown that these can be organized with modest means.
3. Although falling outside of the conference topics, a number of workshops wanted special mention made of the following issues:
 - (a) the need to improve the quality and quantity of physical education programmes in the schools; making them compulsory for all students;
 - (b) the need to include physical fitness programmes and training in teacher preparation;
 - (c) continuation of the Olympic Lottery with the proceeds allocated to a wide range of national fitness programmes;
 - (d) encouragement of service clubs to support community physical fitness projects as part of their respective national programmes.

I. Education and Motivation

RECOMMENDATION No. 1

All personnel should be offered physical fitness programmes during company training courses.

RECOMMENDATION No. 2

The federal government should compile and distribute a listing of all existing employee fitness programmes in Canada with relevant information on each (cost, percentage of participation, facilities, evaluation, etc.) as a means of encouraging other employers to undertake similar fitness programmes.

RECOMMENDATION No. 3

Educational materials related to all aspects of physical fitness including nutrition and the health benefits that will accrue to both the individual and the employer as a result of participation in a regular fitness programme, should be prepared and distributed.

RECOMMENDATION No. 4

Opportunities should be provided for employees to attend physical activity programmes provided by management similar to other educational programmes.

RECOMMENDATION No. 5

Educational campaigns be initiated within companies through the existing internal communication channels, public speaking programmes or inserts in pay envelopes.

RECOMMENDATION No. 6

Awards incentives for employees should be initiated related to their participation in fitness programmes.

RECOMMENDATION No. 7

Management and labour should co-operate in the development of educational programmes on fitness in the same way that they co-operate on safety programmes.

RECOMMENDATION No. 8

The participants of this conference should act as dynamic agents to improve the physical fitness of people in both their home and work environment.

RECOMMENDATION No. 9

Fitness tests should be administered to top executives as a motivational tool in the development of employee fitness programmes.

RECOMMENDATION No. 10

Provincial governments should encourage Workmen's Compensation Boards to make employees aware that fitness programmes lessen the incidence and gravity of accidents.

RECOMMENDATION No. 11

Labour should state clearly their interest in fitness programmes as part of their labour policies.

RECOMMENDATION No. 12

The federal government should develop a performance award scheme for adults similar to the Canada Fitness Award for children. It should develop and fund research programmes designed to evaluate existing employee fitness programmes, and analyse the cost benefits of these programmes to the employers.

RECOMMENDATION No. 13

Insurance companies should be persuaded to consider a reduction in premiums or increased benefits to clients who meet certain specific fitness norms.

RECOMMENDATION No. 14

Participaction, specialized firms or any competent organization should develop a systematic promotional campaign on the benefits of physical activity, and the experience of the City of Saskatoon should be publicized as widely as possible.

RECOMMENDATION No. 15

The federal government should sponsor a National Fitness Week and give it the same promotion as the annual Safety Week.

RECOMMENDATION No. 16

The federal government should give consideration to instituting a programme of financial incentives (direct grants or tax relief) as a means of encouraging business and industry to install physical fitness facilities and equipment for use in employee fitness programmes.

RECOMMENDATION No. 17

The television media should experiment with the inclusion of exercise breaks during regular programming.

RECOMMENDATION No. 18

The media should provide greater utilization of advertising, jointly financed by government and business, to promote physical fitness beyond that of a public service nature as currently being done by Participaction.

II. Organization and Administration

RECOMMENDATION No. 1

Any physical fitness programme should be a co-operative effort between the employer through management and the employees through their elected representatives, and both should accept responsibility for the provision of a physical fitness programme for employees, including the financing.

RECOMMENDATION No. 2

There should be provincial and regional meetings held to discuss the promotion, leadership and organization of employee fitness programmes with the cost of such meetings to be shared by the federal and provincial governments.

RECOMMENDATION No. 3

Recreation Canada should develop and distribute guidelines on such aspects of physical fitness programmes as: medical clearance, legal implication, facilities, administration of programmes and methods of motivation.

RECOMMENDATION No. 4

Recreation Canada should identify the agencies both public and private that are presently involved in fitness programmes, and encourage them to develop programmes in co-operation with labour and business.

RECOMMENDATION No. 5

Recreation Canada should sponsor regional model programmes in a variety of business and industrial settings.

RECOMMENDATION No. 6

Government at all levels should allocate funds or provide incentives for the initiation of employee physical fitness programmes, such as other social programmes that benefit employees, i.e. safety and alcohol programmes.

RECOMMENDATION No. 7

Employee physical fitness programmes should be developed irrespective of the existence of sports and industrial recreational programmes.

RECOMMENDATION No. 8

Consultative occupational health services should be available to every industry.

III. Leadership and Facilities

RECOMMENDATION No. 1

Where feasible, several companies should share a comprehensive centrally-located physical fitness facility.

RECOMMENDATION No. 2

Where convenient, physical fitness programmes should use existing buildings, schools and/or community facilities, however priority should be given to the conversion of existing space in their own buildings.

RECOMMENDATION No. 3

The construction and use of community facilities and recreation areas should be coordinated by provincial and local governments to satisfy all needs by the community including industry.

RECOMMENDATION No. 4

Construction of new industrial buildings should include space for physical fitness programmes.

RECOMMENDATION No. 5

Facilities should include equipment required for basic fitness programmes, i.e. shower rooms, change rooms, etc.

RECOMMENDATION No. 6

A community facility inventory should be developed and made available to industry upon request.

RECOMMENDATION No. 7

Information on physical fitness equipment, including cost, availability and effectiveness should be made available to industry.

RECOMMENDATION No. 8

A mobile fitness assessment unit should be made available to all regions of Canada.

RECOMMENDATION No. 9

Recreation Canada should develop a central information exchange to keep industry aware of what is happening in fitness.

RECOMMENDATION No. 10

Provincial governments should be encouraged to establish agencies for the improvement of physical fitness in each province, whose function would be to encourage initiatives in physical fitness by disseminating information and mobilizing available resources.

RECOMMENDATION No. 11

Government, management and labour should encourage colleges and universities to develop courses for the training of leaders of adult fitness programmes.

RECOMMENDATION No. 12

An information kit for practical application should be developed which includes information related to the legality, medical clearance, labour and human relations, programming and evaluation of physical fitness.

RECOMMENDATION No. 13

Employers and employees must co-operate and provide leadership for instituting physical fitness programmes.

RECOMMENDATION No. 14

Management should employ qualified personnel to plan and supervise the physical fitness programmes for their employees.

RECOMMENDATION No. 15

In-service training for volunteer physical fitness leaders should be provided.

Heart Rate	Contra 100
Bt./min	Bt./min
9	52
10	60
11	66
12	72
13	78
14	84
15	90
16	96



Heart Rate	Contra 100
Bt./min	Bt./min
17	102
18	108
19	114
20	120
21	126
22	132
23	138
24	144
25	150
26	156
27	162
28	168
29	174

RELATED PROGRAMMES



Facility Visits

One of the objectives of the Conference was to show the delegates models of physical fitness centres already in existence, in Ottawa, and to accomplish this bus tours were provided to the various locations, in the National Capital region, where the delegates were made aware of each specific programme, size of the specific area, and the cost accounting of the physical facility and equipment.

Following the Monday afternoon plenary session, approximately 170 delegates visited the various fitness complexes and participated in the fitness programmes which were being conducted after the regular work day.

A popular visit was to the Exercise Physiology Laboratory at the University of Ottawa. Here, visitors saw an ultra-modern exercise stress testing lab complete with treadmill, gas analysis equipment and the many other instruments used in assessing physical fitness. A demonstration was given on the procedure involved in determining cardio-respiratory efficiency during physical stress by means of gas collection and analysis.

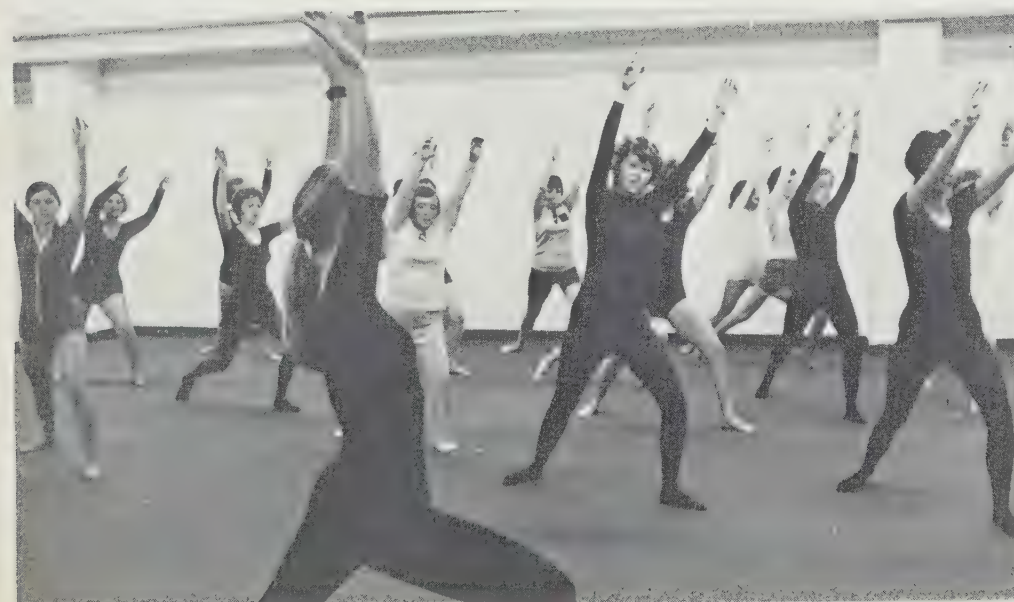
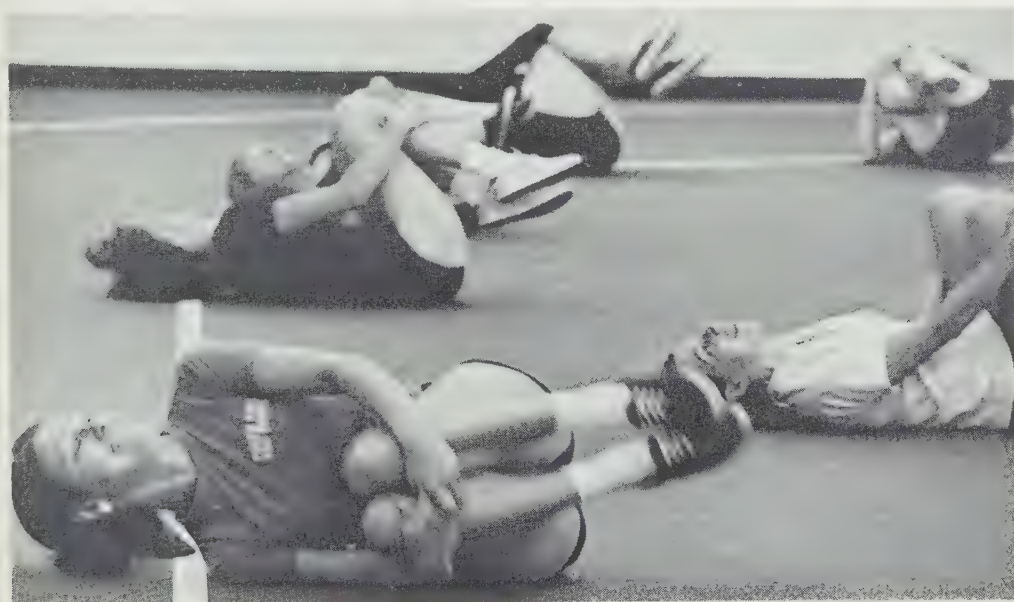
Confederation Heights Employee Physical Fitness Centre was another area visited. This complex, a federal government project, demonstrated how existing facilities could be altered and adapted to accommodate physical fitness. Such areas as group and individual exercise rooms, change room facilities and a fitness assessment area were observed. Delegates could actively participate in, or observe, a class in session being led by one of the Centre's volunteer leaders.

Another option for the delegates was the tour of Carleton University's new physical recreation centre. Visitors to this recently completed structure viewed the latest in architectural design for a physical fitness facility. The tour included a look at the well-equipped individual exercise room, swimming pool, fitness testing area and the injury rehabilitation area. Delegates could swim or use the exercise facilities.

The group exercise area of the National Health and Welfare Department was the next stop. This programme is carried out in the basement of the Brooke Claxton Building in Tunney's Pasture. There, a modest facility demonstrates maximum utilization of a small area within an office complex. One could merely observe or participate in the exercise session.

Other delegates chose to visit the R.C.M.P. Police College Fitness facility. Delegates were given a tour of the staff college fitness area and, all again had an opportunity to observe the regular class session.

At the end of the tour of the facility of their choice, all delegates returned by bus to the Chateau Laurier Hotel.



"The Conference Lifestyle"

From the standpoint of health and fitness, a conference usually epitomizes the negative aspects of today's urban lifestyles; too much food and drink, long hours of mental concentration in smoke-filled rooms without opportunity for physical activity.

In organizing the National Conference on Employee Physical Fitness, attention was given to the imposed limitations of a conference situation. (Smoking was confined to halls outside meeting rooms, meals were planned with concern for low-fat, low-carbohydrate, and low-cholesterol foods while still presenting a well-balanced and appealing menu. Long hours of lectures were interrupted with an exercise break or a nutritious snack. Further opportunity was given for exercise testing). These limitations also made it possible to estimate the energy consumption and expenditure of delegates whose meals and activities were pre-arranged. Because the first day of the Conference was tightly scheduled with similar activities for all delegates, a balanced graph of energy costs (based on a given estimated weight of a male and a female delegate) was presented on the centre page of the programme. From this graph, each individual could assess and adjust his or her own "input" and "output", accordingly.

Judging from the viewpoints of the media and the delegates this presentation "nutrition and activity awareness as an important part of one's lifestyle" was an interesting facet of the overall conference.



*You are what you eat***Menu**

ounces		calories
2	Salmon Medallion Bellevue	100
1	Tartar Sauce	30
5	Roast Sirloin of Beef	400
1	Sauce Richelieu	38
3	Tomatoes Provencale	135
4	Cauliflower au Gratin	24
4	Potato Croquettes	130
2½	Grand Marnier Ice Cream Parfait	110
1	Crescent Roll	90
	Coffee/tea/milk	(40)
4	Wine	100
Total caloric consumption		1199

*Vous êtes ce que vous mangez***Menu**

onces		calories
2	Médailon de Saumon Bellevue	100
1	Sauce Tartare	30
5	Rosbif de Surlonge	400
1	Sauce Richelieu	38
3	Tomates provençales	135
4	Chou-fleur au gratin	24
4	Pomme-de-terre en croquettes	130
2½	Parfait glacé au Grand Marnier	110
1	Croissant	90
	Café/thé/lait	(40)
4	Vin	100
Consommation totale de calories		1199

Demonstrations and Participation in Fitness Assessment Session

Time was allotted at the Conference on Employee Physical Fitness for the delegates to get actively involved in assessing their own personal physical fitness. This was accomplished by various tests which were demonstrated and explained prior to their participation. Following the tests, results were given out and assessments made regarding their present fitness level compared to other Canadians of the same age and sex. Fitness consultants were available to analyze results and explain print-out sheets from the various tests.

The primary objectives of the session were motivational and educational, and hopefully, incentives were given to strive for.

To begin the session, all delegates were required to fill out an Activity Readiness Question proposed by M.A.B.E. (Multidisciplinary Advisory Board on Exercise) and researched by B.C. Department of Health. The use of the questionnaire was to assist in the detection of those individuals for whom vigorous unsupervised physical activity is contraindicated, pending medical evaluation and opinion. A series of tests was available to the delegates:

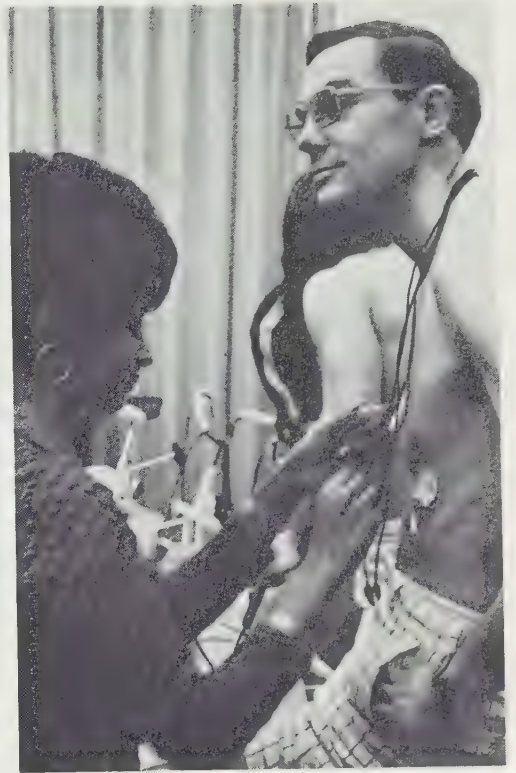
The Physical Fitness Appraisal measured flexibility, strength and the percentage of body fat. (All of these parameters are reflections of physical fitness and can usually be improved through regular physical activity).

Cardio-respiratory fitness was assessed by two different methods: *The Canadian Home Fitness Test*—a modified step test to music—for use in the home, is a safe and simple test. It is self-administered. The *Bicycle Ergometer Test* also assessed the cardio-respiratory fitness with heart rates being monitored by means of an electrocardiograph supplied by Quinton Instruments. This predictive test gave delegates an opportunity to see how their hearts, lungs and circulatory systems responded to a physical stress. (Six delegates were assessed at one time).

Pulmonary Function Test: The test measured the efficiency of the lungs revealing four different capacities of the lungs which may be affected by various lifestyles. As in the other tests, delegate participants were given norms for comparison.

From the numbers of delegates who participated, the session appeared to be successful and thus fulfilled the purpose of making delegates aware of the various motivational fitness tests which can be administered as part of a fitness programme.





Evalu*Vie/Health Hazard Appraisal Display

A major influence on an individual's health is the cumulative effect of daily lifestyle decisions. During registration, delegates were invited to submit a personal Risk Registry for appraisal by a computer. On Monday morning, facilities were provided to monitor blood pressure and analyze blood cholesterol levels. By popular demand, these facilities were also provided Monday evening. A new procedure was employed for analyzing blood cholesterol level which was developed by Dr. Frank Peters of the Ontario Ministry of Health. It involved taking a drop of blood from a finger prick, treating the blood sample and comparing the sample to standard blood cholesterol concentrations. The results were then added to the risk registries and subsequently processed. Individual computer printouts were obtained for each delegate submitting a risk registry.

On Tuesday and Wednesday, Health Hazard Appraisal staff and nurses from the National Capital Zone interpreted the printout results to delegates.

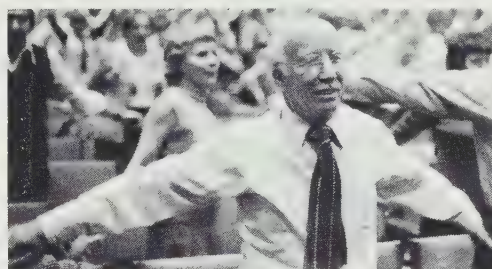


Exercise Break

The aim of an "exercise break" is to provide a short interlude of relaxation and exercise during the working day, with the intent of stimulating circulation, improving posture, relaxing tense muscles, and counteracting boredom or mental fatigue. The exercises should not be strenuous enough to cause sweating, since increasing overall physical fitness is not one of the purposes.

The demonstration exercise break at the conference was done to music, and consisted of three main types of exercises: finger, wrist and arm exercises; total body movements for stimulating circulation; deep breathing and shoulder flexibility exercises for relaxation purposes.

Participation was 100% – even the translators in the booth joined in, while still continuing with the simultaneous translation! The demonstration accomplished its purpose, in that participants could better understand how such a break could perk-up an office worker during the "low" period in mid-afternoon.



**Delegates to the conference
represented the following companies/
organizations from across Canada**

Atlantic Provinces

Brookfield Foods
Sydney Steel Corporation
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Newfoundland
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Epilogue

The preceding was an account of the National Conference on Employee Physical Fitness.

It is directed primarily to those who attended, to give them a lasting memento of what took place, but, we hope, especially to serve as a reminder of the need to carry out those recommendations that are appropriate to their situation.

On behalf of the Planning Committee, I sincerely hope that this conference may have meant an important step in the development of adequate programmes to offset the detrimental influences of an increasingly sedentary work environment.

I furthermore hope that this document will be read by many who did not attend and that it may serve as an inspiration to all, to implement the basic principles it expresses, for the improvement of the health of Canadians in general and for the benefit of the individual employee in particular.



Cor Westland,
Conference Chairman.

